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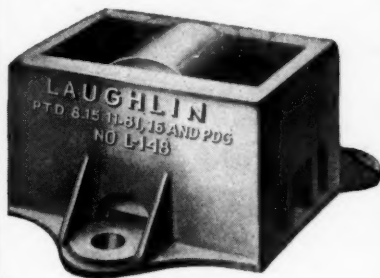
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SIXTY-SEVENTH YEAR

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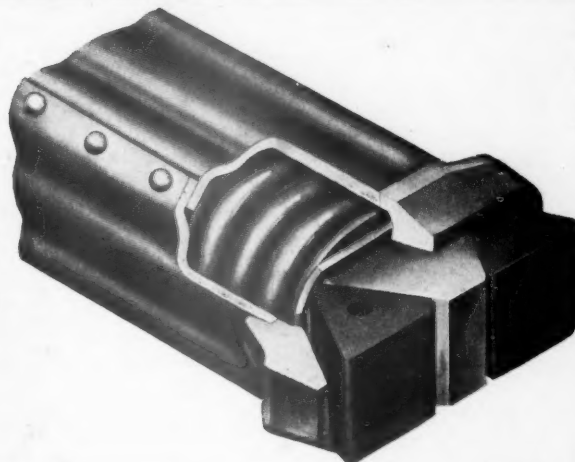
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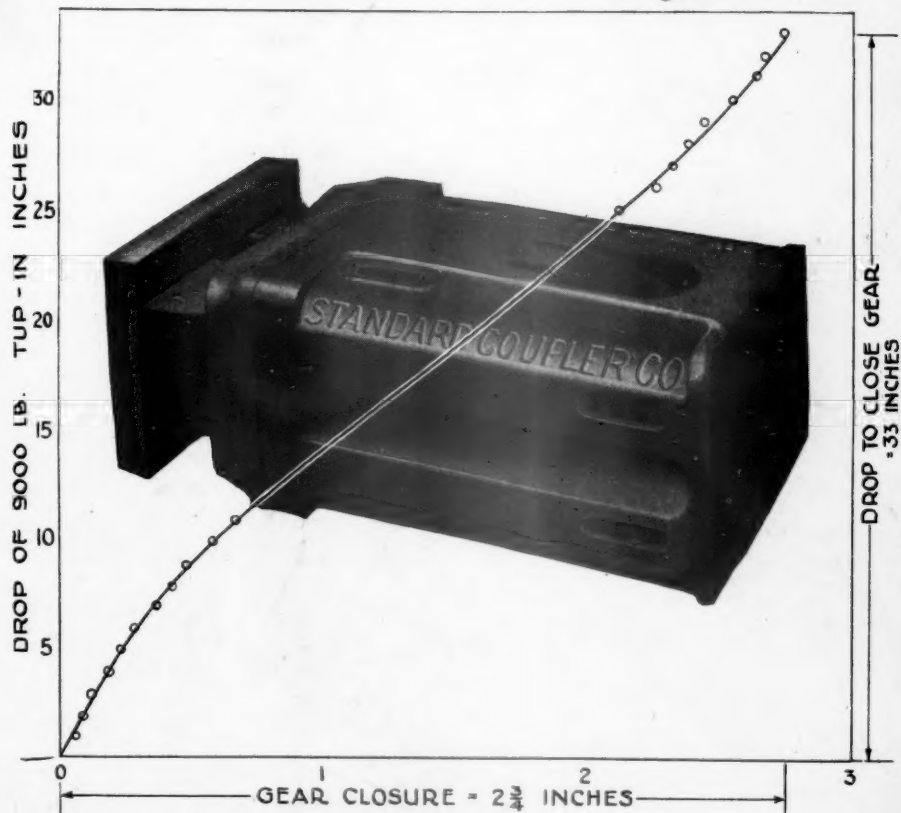


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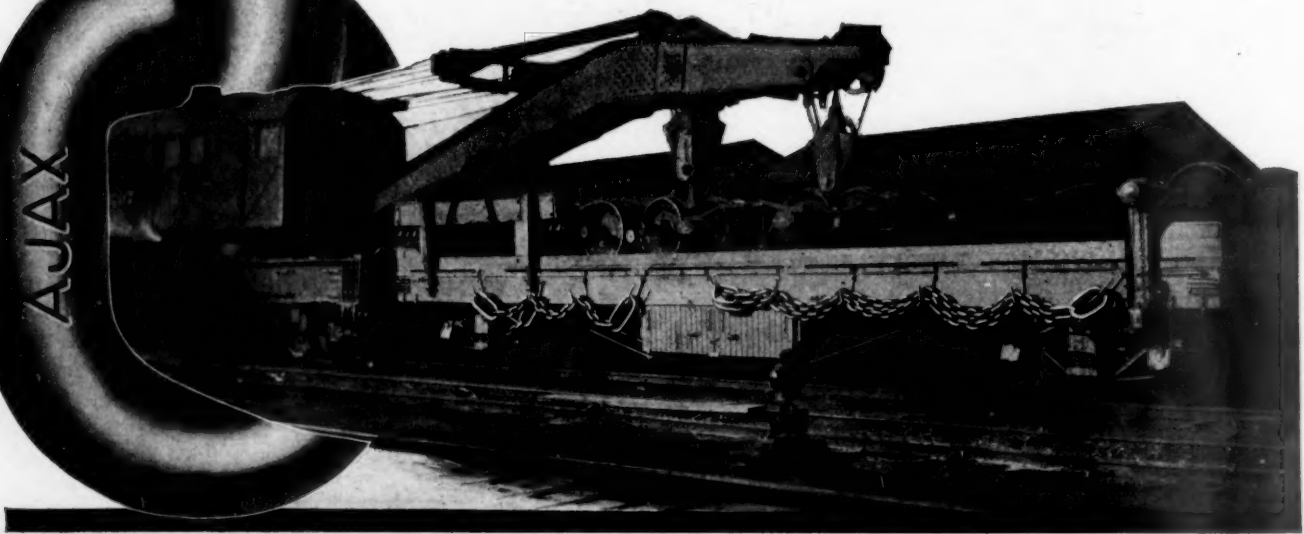
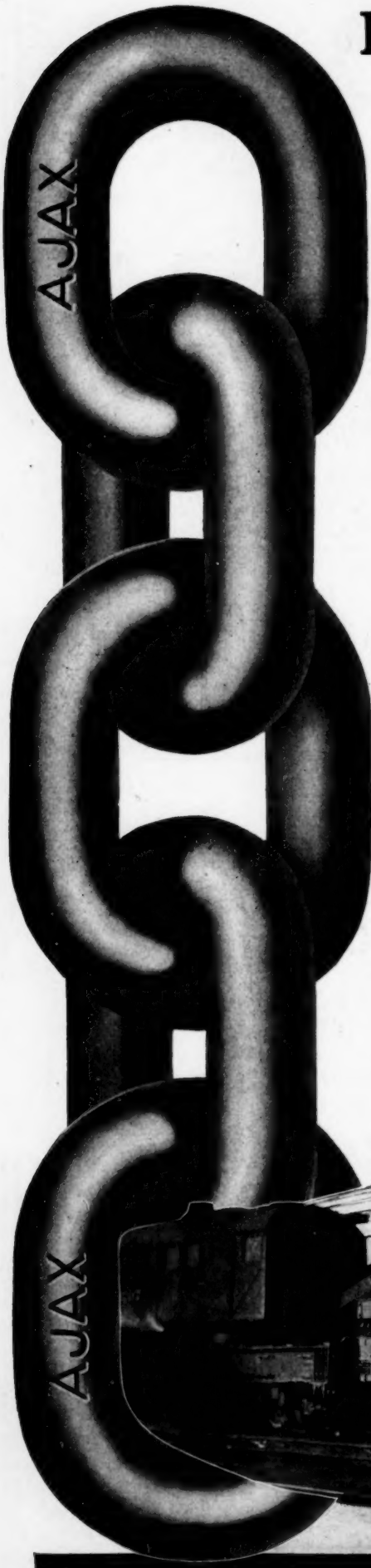
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EDITORIAL

Railway Age

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The degree of efficiency with which a locomotive performs its work day after day is largely dependent upon the standard of maintenance which the management

Economies from Better Locomotive Maintenance

had set and to which the forces at the terminals are held. The selection of a general design and the working out of details which are capable of keeping down costs of operation is only the first step. Neither will it be possible to obtain adequate returns on the original capital investment if the management simply establishes a standard of maintenance and then fails adequately to see that this standard is consistently followed. Standards, like laws, are worse than useless if they are not enforced. In these days when it is necessary to make every saving possible and hold costs to a minimum, there is a strong tendency to consider a dollar not spent as a dollar saved. As a consequence many a locomotive in service today is in operation with the valve motion not properly adjusted, cylinder or valve packing leaking, draft appliances in the front end not in proper shape, engine not steaming freely; although it manages to take its train over the road, the coal consumed is considerably more than necessary. It is to be feared that quite a percentage of the savings which have been effected by reducing expenditures for locomotive maintenance have simply resulted in saving at the spigot and wasting at the bung hole. This false economy may not show as accounts are now kept but there are large and unnecessary bills for fuel and oil which have to be met even though they are buried out of sight.

The Van Sweringen interests of Cleveland have purchased for \$3,000,000 the majority stock interest held by the New

The Van Sweringen Group

York Central in the Lake Erie & Western. They now control the New York, Chicago & St. Louis, the Toledo, St. Louis & Western and the Lake Erie & Western, three lines having a total mileage of approximately 1,700 miles. It is too early as yet to ascertain just what is behind the gathering in of these three lines under one control. The Lake Erie & Western operates 738 miles. Its main lines extend from Sandusky on Lake Erie to Peoria; from Indianapolis to Michigan City, and from Fort Wayne, Ind., to Connersville, the latter two lines crossing the first at right angles. That the three roads should be brought under one control seems to be a consistent development. The Nickel Plate has made a place for itself in fast freight service between New York and Chicago over its own line and to St. Louis via connections, one of which is the Clover Leaf, connecting with the Nickel Plate at Continental, Ohio. The importance of the Lake Erie & Western in the group will presumably be because of its connections at Peoria and because of its being a feeder line for the group. The grouping, further, is in accordance with the tentative plan of consolidation proposed by Professor Ripley and by the Interstate Commerce Commission. Professor Ripley, for instance, suggested that the Lake Erie & Western might better be joined with the Nickel Plate rather than with the New York Central as it has been for several years. The I. C. C. plan included in its System No. 5, the Wheeling & Lake Erie, the Pittsburgh & West

Virginia, the Bessemer & Lake Erie, etc. Professor Ripley gave this group as its main stem the Lackawanna; the I. C. C. changed this in its tentative plan to the Lehigh Valley. The question now arises as to how much farther the Van Sweringen plan will be carried, if it is to be carried farther.

The police power of the state is constantly up against a task that is too much for it; the task of repressing innumerable

A Crossing Law in Virginia

offenses against the safety, the decency, or the comfort of the public, which offenses are too small to be punished; or, in more exact phrase, so small that society has found no practicable way of punishing them, except spasmodically. For example, playing ball in the streets; speeding (by automobiles) which is not bad enough to be susceptible of proof in court the next day; smoking in railroad waiting rooms, varied noise nuisances, and so forth. The crime of crossing a track carelessly must, usually, be included in this class; and this paragraph is written to call attention to a new law in Virginia, noticed on another page. This law requires every driver to stop before going over a track, with certain exceptions. It is a good law. But the exceptions weaken it; and exceptions conceived in the driver's mind will weaken it still further. At a track which is traversed by only a very few trains each day the majority of drivers may be expected to break the law. These obvious considerations will serve to remind us that the value of such a statute as this must be largely in its remote or indirect effect on the public mind. It must be posted, and be talked about; and its principle must be got into the people's minds in whatever ways may be found feasible. It deals with a very old problem; and to find new ways to settle old problems requires endless ingenuity. A good point for the well-disposed autoist to remember is that although the statute only mentions one thing for him to do, the courts will require him to take whatever precautions ought to be taken by a level-headed, intelligent, unexcited, unselfish citizen. That is to say, except where there is ample reason for suspending the rule, he must do three things:—

STOP, LOOK AND LISTEN

Under the influence of increased traffic Henry Ford's "model" railroad, the Detroit, Toledo & Ironton, is making a more

Ford Railroad Shows Increased Net

satisfactory showing than it did last year. For the month of March it reported to the Interstate Commerce Commission a net operating income of \$176,659, an increase as compared with last March of \$116,889. For the three months of 1922 the net operating income was \$334,556, an increase of \$582,957 as compared with last year, when there were deficits in January and February. The report shows an increase in operating revenues of \$960,338 for the three months and an increase in expenses of \$240,340. Maintenance of way ex-

penses were reduced but there was an increase in maintenance of equipment of \$104,530 and in transportation expenses of \$213,406. If the increase in traffic should continue at this rate Mr. Ford might be able to pay a dividend this year but last year there was a considerable slump toward the end of the year which wiped out the net for several months and left a balance for the entire year representing less than one good month's business, far short of enough to pay interest charges.

It is evident that for every car moving loaded in the direction of heavy traffic, a car must be moved, either empty or loaded, in the opposite direction. It is also evident that for every fully loaded train moving in the direction of heavy traffic, an engine and crew must be moved in the opposite direction, even though tonnage is not available. How, then, should these two balancing movements be combined to produce the most economical operation—by the accumulation of empty cars for fleet distribution from market to producing territories, or by the nearest possible approach to a car for car exchange? Since there can be no delay in balancing train movements, is not the latter likely to produce the best results? It is evident that every fleet movement must actually effect an increase in train mileage which would be avoided by the current movement of empty cars as a part of the light trains which must be run in either case. These are pertinent facts which should be kept clearly in mind in discussing the merits of any system of car service, whether it be founded on the principle of individual ownership or of central ownership and distribution control.

Balancing Car Movement

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April saw the placing of more orders for cars and locomotives than has been the case for any month for an extended period of time. The number of locomotives ordered for domestic service totaled 272; of freight cars, 29,345 and of passenger cars, 540. There were ordered in April more freight cars and more passenger cars than were ordered in all twelve months of 1921. The April figure of 29,345 freight cars compared with total domestic orders placed in 1921 of 23,346. The April passenger car figure of 540 was double the entire 1921 total of 246. This shows the degree of contrast between the activity of the railway supply field at present and the lack of activity in 1921. It evidences a decided improvement—to put it mildly—and indicates that the equipment market has succeeded in climbing out of what in 1921 seemed to have all the aspects of a bottomless pit. But a more interesting feature is that the 1922 orders

Equipment Orders in April

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DOMESTIC ORDERS

	Locomotives		Freight Cars		Passenger Cars	
	1922	1916	1922	1916	1922	1916
Jan.	5	231	7,960	14,613	235	—
Feb.	8	272	14,771	9,323	160	—
March	76	634	6,550	14,233	25	—
April	272	178	29,345	7,228	540	—
Total 4 mos.	361	1,315	58,626	45,397	960	683

to date are back at their pre-war level, as indicated, for instance, in such a year as 1916. In the first four months of 1922 the total orders for domestic freight cars totaled 58,626, one-half of which orders were reported in April alone. The total for the first four months of 1916 was 45,397. The orders in April were double those of the best month in the first third of 1916. The total domestic passenger car orders

in the first four months of 1922 have been 960, over half of which were ordered in April. This compares with a total of 683 in the first third of 1916 and shows the degree of effort which the railways have been using to make up for the lack of new passenger equipment acquisitions since the beginning of federal control. Locomotives do not show the same results as cars. The total for the first four months was 361, as compared with 1,315 in the first four months of 1916. But the outstanding factor in the case of locomotives is that of the 361 for January to April, 1922, 272 were ordered in April, which means that the locomotive orders are coming in at a rapid rate but have been slower in getting started than has been the case of cars. All these details confirm the opinion of those who have been preaching optimism about the industrial revival.

Statistics prepared by the United States Forest Service in co-operation with the American Wood Preservers' Association, show that 55,383,515 ties were given

Timber Treatment on the Increase

preservative treatment in 1921. This represents an increase of 26½ per cent over the number of ties treated in 1914, the high point in timber preservation before our entry into the war. Subsequent to 1914 the timber preserving industry suffered a marked decline so that ties subjected to preservative process in 1918 reached the low figure of 30,609,209. Since that date, however, there has been a steady recovery and the results for 1921 indicate not only a complete restoration of all the ground lost during the war period but also a marked extension in the use of treated ties by the railroads. The past year has seen considerable developments in this industry, including the construction of a number of new treating plants and a greater utilization of treated ties by roads which hitherto had not considered the treated tie with much favor. Unfortunately no figures are available for the total consumption of cross ties by the railroads. Consequently, it is impossible to give any accurate comparison between the number of treated and untreated ties used, but it is apparent that the volume of treated ties now represents close to one-half of the total consumption of cross ties.

The *Railway Age* is pleased to publish elsewhere in this issue the clearest, most succinct account of conditions as they are in Russia which has come to its notice. A considerable literature in the form of books and magazine and newspaper articles has grown up on this subject. Many of these articles and books absolutely condemn the present regime and just as many, or maybe more, concern themselves with the whitewashing of the activities of the Soviets. The article we publish does not deal with politics as such. Instead it tells of the economic condition of the country—not only of the railways, but of agriculture and industry in general—and how the present government is absolutely powerless in improving conditions. Our correspondent, who has but recently returned from extensive travels in the country, believes that Russia is a land of opportunity for capitalists who are willing to take great risks in return for prospective gains enormous in proportion. Naturally America is the country where one looks not only for capital in sufficient amount but for financial leaders with sufficient daring to undertake such a venture. The writer, who must unfortunately remain nameless, will, we believe, leave our readers with the hope that American financial leadership will interest itself in Russia's problem, for the benefit of all concerned. According to recent news from Europe, British capital seems already to be interested.

Russia, the Land of Opportunity

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The station agent or conductor to whom is addressed a criticism of his railroad must reply to it; and the nature and tone of his reply may make or lose a

Good Work With

Poor Tools—

If Necessary

friend. Indeed, the thousands of such replies that will be made within the next week, taken as a whole, will be a material element in the public sentiment which will rule the railroads of America for the next year, or series of years. This connection between a casual conversation and an imponderable thing like public sentiment, seems too vague to be dealt with seriously; every officer, station agent and conductor finds things more immediately practical with which to busy himself. But why not deal with it seriously? In fact we do, in lectures and circulars. But lectures and circulars are nothing but words; how can we get down to brass tacks? These thoughts arise on reading the last circular of W. A. Winburn, president of the Central of Georgia, which says in part:

"To render efficient service, should the anticipated revival in business mark the harvest season, will be no easy task. Alertness, energy, courtesy and a whole-hearted willingness to be of service must characterize our efforts to have the *human equation supply any deficiencies* that may appear in mechanical equipment. When business is dull the public is inclined to feel that transportation rates are burdensome and we of the Central of Georgia have not been able to prevent that feeling, or to offer a remedy. Should business become brisk, the demand will be for quick, sure and adequate service. This we can and must supply. A personnel that can 'weather a storm,' can likewise 'make hay while the sun shines.'"

Or, concretely, if the locomotives on your best trains are not equal to making time; or, because there are too few locomotives, the switching service at your station is half a day behind time, your explanation must be *adequate and sympathetic*. As the local representative, how will you word it? How can you meet these little emergencies unless you rehearse them over, in imagination, beforehand?

The Coal Strike and Railroad Earnings

THE coal loadings for the week ended April 8 were 69,456 cars; for the week ending April 15, 62,851 cars, and for the week ending April 22, 63,445 cars. These loadings are at a rate about one-half those for the corresponding period of 1921 when business was poor. They are about one-third those for the early part of 1920 when business was good, and about one-half those of the weeks in 1920 in which occurred the outlaw strike of the railroad switchmen. The March, 1922, loadings ran about 200,000 cars a week, due primarily to the heavy movement of coal in anticipation of the coal strike, which began according to schedule on April 1.

No one seems to be worried very much about the coal strike. One of the reasons is that a very large quantity of coal moved in anticipation of the cessation of work in the union districts. Another is the manner in which fuel supplies are being received from the non-union fields. There is another reason also in that the operators—and the same applies to the miners—have not seen fit to say much about the strike, which may be due to the fact either that they do not want to do so or do not know how.

Another interesting feature is that the stock market seems to have paid little or no heed to the strike. Although the financial centers were well aware that the elimination of a large share of the coal tonnage would have a somewhat unsatisfactory effect on railroad earnings, the trend in railway shares throughout the month of April was upward. The *Railway Age's* average of the prices of 20 representative railway stocks stood on March 28 at 60.60; on May 2, it had risen to 65.26.

It is, of course, true that the strike will not last forever. It is also presumably the fact that as soon as the strike is ended the movement of coal will be heavy, due to the continuing revival in industry and the need of catching up on depleted stocks of fuel. The situation as a whole resolves itself into a presumption that railway earnings will continue

to increase gradually throughout the year except as concerns the months in which the strike remains effective. The railway earnings now being reported for March are very favorable. However, it is necessary to bear in mind that these earnings do not paint a true picture. There will be those who will try to show that they indicate a return to normalcy. If this is done it will be far from the facts. The March earnings were affected by the increased coal tonnage anticipatory to the strike. The April earnings will be much poorer and may be very disappointing because of the importance which the coal traffic bears to the total, and particularly will these things be true in the case of the roads which derive a large part of their tonnage from coal.

It is interesting to examine the situation as it is affecting the leading coal railroads. The details show the practical elimination of coal traffic on many of them. The roads serving the non-union coal areas, fortunately offer a few exceptions, and presumably will have to be regarded as supplying the silver lining to the cloud in the situation. The roads in the Pocahontas district, including the Chesapeake & Ohio, the Norfolk & Western and the Virginian are loading more coal than ever. The Norfolk & Western, to take the leading example, is doing especially well, serving as it does the non-union Thacker, Tug River, Kenova, Pocahontas and Clinch Valley coal fields. In the week ended April 8 it loaded 11,446 cars, or more than one-sixth the total coal loadings for the entire country.

Another road which is doing well in the coal strike is the Louisville & Nashville, serving mines in Kentucky. In fact the roads in the south are, on the whole, not seriously affected by the strike. The figures for the district include those for the Illinois Central, the traffic of which has been seriously cut. Nevertheless, the coal loadings for the week ended April 22 in the southern district totaled 15,698 cars, as against 17,646 in the corresponding week of 1921.

COAL LOADING ON SOME OF THE LEADING COAL ROADS

Railroad	Week Ended April 8, 1922	Corresponding Week 1921	Week Ended April 15, 1922	Corresponding Week 1921
Eastern District:				
B. R. & P.	471	1,371	622	1,100
Delaware & Hudson..	1,283	4,804	838	4,739
D., L. & W.	320	5,268	234	5,170
Erie	60	4,076	3	4,305
Lehigh Valley	353	6,571	256	6,479
New York Central...	182	1,229	173	1,528
C. C. C. & St. L.	1	1,816	0	1,667
Hocking Valley	0	770	0	912
W. & L. E.	156	1,463	162	1,469
Allegheny District:				
Baltimore & Ohio....	6,234	8,178	5,742	8,715
Central of N. J.	0	3,086	0	3,136
P. R. R.	10,614	18,188	6,774	18,579
P. & R.	1,547	5,823	1,374	6,195
Western Maryland...	368	1,388	380	1,403
Pocahontas District:				
C. & O.	7,798	7,516	8,471	8,437
N. & W.	11,446	6,076	.....	.....
Virginian	1,943	1,577	2,010	2,071
Southern District:				
Southern	1,934	1,737	1,784	1,907
I. C.	1,337	3,925	1,133	4,285
L. & N.	7,076	7,468	8,165	7,722
Western District:				
A., T. & S. F.	383	813	340	1,189
Chicago & Alton....	229	1,105	60	1,906
C., B. & O.	250	3,315	201	3,788
C. T. H. & S. E.	0	1,588	2	1,411
Missouri Pacific.....	106	911	69	1,096
St. L.-S. F.	928	1,276	828	1,422

The roads which are being most adversely affected are the anthracite carriers because no anthracite is being mined at all. The figures for these roads and those for the others shown—excepting possibly the Baltimore & Ohio and to a lesser extent, the Pennsylvania—are striking and show that the cessation of work in the coal mines is having a potent effect.

It is, of course, true that these figures do not give a complete story. The Hocking Valley, for example, is loading no coal on its own lines; it is, however, receiving business from the Chesapeake & Ohio. The Big Four similarly is loading no coal; it receives, however, a large tonnage in interchange from the Louisville & Nashville. However, it is evident that most of the roads mentioned other than those,

such as the Norfolk & Western, the Louisville & Nashville, etc., are going to show the results of decreased coal tonnage in their earnings statements. The tonnage involved is great, as is the gross revenue to be derived therefrom.

These facts indicate the railroad interest in the coal strike, and tend to make those interested in railway matters feel somewhat concerned that the strike is receiving so little attention or that little or no progress is being made towards its settlement.

Some Thoughts on Valuation

THE HISTORY of the discussion and legislation regarding valuation of railways might be made the subject of an amusing disquisition. It would be highly diverting if the question of valuation were not so serious. It is difficult to become facetious regarding a problem the solution of which may result in the recognition or in the confiscation of equities in property amounting to billions of dollars. The way this problem is solved is going to put to the test the intelligence and integrity of the American people. If some of the principles advocated should be adopted those who have invested in good faith in railways would be subjected to legalized robbery. If such a precedent were set in the case of the railways no kind of property in this country could be regarded as safe from seizure under the forms of law.

It is time to recall the developments which have produced the present situation with respect to valuation. Many seem to think the railways asked for it. They did not. Their spokesmen always contended that valuation was not the right basis for making rates. The agitation for legislation to require the Interstate Commerce Commission to make a valuation was carried on mainly by those who alleged that the railways were grossly overcapitalized. They contended that the railways charged excessive rates to earn a return on vast amounts of "water." They argued that a physical valuation would prove their charge of over-capitalization and that the valuation should be made in order that rates might be fixed which would yield only a "fair return." They seemed confident that a valuation would justify wholesale reductions of rates.

The valuation bill finally passed by Congress in 1913 was originally drafted by Senator LaFollette of Wisconsin. He had alleged over-capitalization against the railways oftener than any other man in the country. His original bill designated the Interstate Commerce Commission to make the valuation. The enemies of the railways both got the legislation passed and selected the body to do the work.

The sequel seems to show that they did not so much want to find the true value of the railways as to cause confiscation of a large part of them. When the Transportation Act of 1920 was passed the commission had been working on the valuation over six years. It had inventoried the physical properties of most of the railways and had the records in its office. The Transportation Act directed it in regulating rates to take into consideration the information it had gathered. The commission for the purpose of the rate case of 1920 placed upon the railways a tentative valuation of \$18,900,000,000. Its members repeatedly have told members of congressional committees that this was based mainly upon the results of their investigation under the valuation law.

Nevertheless, the very people who got the valuation law passed have been amongst the loudest and most active in disseminating propaganda to discredit the commission's tentative valuation as grossly excessive. It was to be expected that the railway labor leaders would attack it. They want to see the earning capacity of the railways destroyed as the shortest way of bringing about government ownership and employees' management under the Plumb plan, and they

have contributed to the discussion some remarkable impromptu valuations of their own. William H. Johnston, president of the International Association of Machinists, took a few minutes from other duties one day and made a valuation of \$8,610,000,000. President Markham of the Illinois Central showed that Mr. Johnston's valuation defied the ordinary rules of arithmetic and that if it had conformed to those rules it would have been \$4,640,000,000 bigger. Glenn E. Plumb then rushed to the rescue and offered for consideration one valuation of \$9,400,000,000 and another of \$10,100,000,000. Meantime an anonymous "eminent economist" contributed to the Firemen's Magazine a valuation of \$13,000,000,000. These labor leaders differed among themselves to the extent of \$4,400,000,000. But what are a few dollars between friends working for the same cause?

Most astonishing, however, has been the attitude of men such as Senator LaFollette and Clifford Thorne, who were among the most earnest advocates of the valuation legislation passed in 1913. They both advocated having the valuation made by the Interstate Commerce Commission and both now indignantly repudiate the commission's own findings. The man who repudiates the findings of an arbitrator selected by himself can hardly be called a good sportsman, whatever else he may be.

Mr. Thorne's inconsistencies are the most glaring of all. They cannot be ignored because he has been counsel of the American Farm Bureau Federation, and his views are widely circulated among the farmers.

Soon after the commission's tentative valuation was made he got the American Farm Bureau Federation to adopt a resolution setting forth that it was \$5,000,000,000 too large. This apparently was based upon computations, by which he had ascertained that the total value of railway securities measured by their market prices in 1920 was less than \$13,000,000,000. In the recent rate hearings he put an accountant on the stand before the Interstate Commerce Commission to present an estimate that, based on the valuations of individual railways already made public, the total valuation of all the railways should not exceed \$16,000,000,000.

Mr. Thorne seems to have forgotten, or to think other people have forgotten, that he began making valuations of railways some years ago. He made one in 1913, and some light may be thrown on his consistency and sincerity by comparing what he says now with what he said then. Over eight years ago, in a public address, he gave the results of a computation regarding the value of the railways which he had based upon the market prices of their securities as indicated by stock exchange quotations in October, 1913. His estimate of the valuation of the railways then was exactly \$13,969,173,383. Mr. Thorne is nothing if not exact in his figures. The new capital which has been invested in the railways since 1913 exceeds \$4,500,000,000. Therefore, if Mr. Thorne's estimate of the value of the railways was right in 1913 their value at present must be at least \$18,500,000,000, or less than one-third of a billion dollars less than the valuation placed upon them by the Interstate Commerce Commission. We shall only remark in passing that in the fall of 1913 the market prices of railway securities were the lowest that they had been for some years. Of course, this was not the reason Mr. Thorne used them as a basis for his computations.

The most notable fact regarding these ready-to-wear valuations which have been made by various persons not previously recognized as "experts" upon the subject is not that they differ from that of the Interstate Commerce Commission but that they differ so much among themselves. Mr. Thorne's accountant's valuation is \$7,400,000,000, or 86 per cent bigger than that of William H. Johnston, although both are based upon the valuations of individual railways already made public by the commission. It can hardly be expected that the commission will be much influenced by them.

But what about the effect upon public opinion? The labor leader's estimates are being widely disseminated among railway employees. Mr. Thorne's estimates—not his 1913 estimate, but the recent ones—are being widely disseminated among the farmers. They are all a part of the propaganda to discredit private ownership and management of railways. They are intended to prevent the railways from being allowed to earn sufficient net return to make adequate improvements and enlargements of their properties. They are intended to help not only to make the success of private management impossible, but to create a public sentiment which would cause confiscation of a large part of the investment in railways if government ownership should be adopted.

We do not expect the propaganda to be successful. We believe the public is gaining constantly a better understanding of its true character and purpose. But no reasonable effort should be spared to make sure that the public will understand its true character and purpose.

New Books

The Firing of Locomotives. By J. F. Cosgrove. 368 pages, illustrated. 6 in. by 9 in., one chart. Book Service Department, Simmons-Boardman Publishing Company, New York.

The railroads of this country use in locomotive service practically every kind, grade and size of coal produced. The characteristics of these fuels vary widely; some coke in burning, some clinker, some are very high in gaseous content others have excessive ash. The variations in the characteristics of the coals make it necessary to use different methods in firing them if the best results are to be obtained in each case. Because of the wide variety of conditions, it is extremely difficult to prepare a book that will deal satisfactorily with firing practice in various sections of the country. Mr. Cosgrove has had the benefit of long and varied experience and his book is undoubtedly the most authentic and comprehensive work of its kind that has been published.

The book treats the subject of firing in a logical manner. The composition of the various types of coal and their principal characteristics are first discussed. This is followed by a section on the principles of burning coal in locomotives. The general theory of combustion and the chemical processes involved in the burning of coal are explained in simple language. Thus the first section of the book gives the fundamental principles that underlie correct firing practice.

The remainder of the book is devoted to a detailed consideration of the various conditions met in actual service and the methods to be used under each condition to obtain the best results. The locomotive boiler and appliances are described with particular reference to their influence on firing methods. Several chapters are devoted to a detailed discussion of the proper methods of handling the fire—such subjects as the thickness of the fuel bed, shaking of grates and the prevention of clinkers are discussed fully. The proper practice when firing the various types of coal is treated and instructions are given for firing under adverse conditions. The last subject discussed is the operation of stoker locomotives. Detailed instructions are given for the operation of the stoker engine to obtain uniformly good results under various conditions of operation.

The coal chart accompanying the book lists the coals mined in every state, giving the principal characteristics, such as heating value, fusing temperature of ash, and the proportion of the various constituents.

The proper methods of firing are of the utmost importance in securing fuel economy irrespective of the equipment or the grade of coal used. Mr. Cosgrove's book is a valuable contribution to this important subject. It has a place in the library of everyone who is interested in saving coal, from the purchasing agent and superintendent of motive power to the engineer and fireman.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]

Motor Truck Competition in New England

LONDON, England

TO THE EDITOR:

Slason Thompson's letter in your issue of April 1 demands from me the courtesy of an answer. It shall be very brief.

No conceivable reduction of wages can enable the railroads of New England to reduce their rates sufficiently to prevent motor trucks abstracting a considerable proportion of their traffic under present conditions. Motor truckage will always be cheaper in certain cases so long as the railway rate has to cover capital cost, maintenance cost and movement cost; while the truckage rate has to cover movement cost only. Sooner or later, the public will have to make up their minds to put a stop to the present unequal competition, either by charging the motor truck for the use of the road, or by assuming as a public charge some portion at least of the cost of provision and maintenance of the railroad. Possibly the "sooner" may come when the Interstate Commerce Commission is invited to sanction an increase in New England rates on traffic for which the motors cannot compete, because the railroads have been deprived of the profit which they formerly made on the traffic which the motor trucks have taken away.

W. M. ACWORTH.

Why Not Have a Joint Bureau of Research?

TUCSON, Ariz.

TO THE EDITOR:

Most of the larger industrial companies in the United States maintain departments of research for the purpose of improving their product, or of reducing its cost. We are also familiar with the reports of what Germany has done to commercialize the results of scientific investigation. These facts, together with the financial and competitive difficulties experienced by the railroads of late years, and which threaten to become worse rather than better, have suggested to my mind this question:

Why do not the railroads of the country club together and jointly maintain a department of research for their mutual benefit?

The object of such a department would be: To search out all possible ways of improving service and reducing costs of operation; to co-ordinate the work already being done by the roads independently; to co-operate with those roads already engaged in some special lines of investigation, and to seek aid and co-operation from the laboratories of the technical institutions and universities of the country. This last would appear to be a reasonable return for the taxes paid by the railroads, and would assuredly be welcomed by those in charge of such laboratories because of the practical contacts thereby afforded.

To illustrate the work of such a department of research one might consider these questions. What would be the net saving in operating expenses if the draw-bar pull for a

given train could be cut in half, or even reduced 25 per cent of its present amount? Might not a new type of car bearing be developed that would accomplish this without materially increasing the financial hazard of wrecks due to journal troubles? Or again since the present type of locomotive has about reached its maximum development in respect to size and economy, is it possible to evolve any other type that would be more desirable and satisfactory?

In order to stimulate the inventive thought of its employees and keep them actively alert for the betterment of this work it would be merely good business policy financially to reward those responsible for accepted improvements by a certain percentage of the savings effected during some period of time such as say ten years.

What do your readers think about this suggestion?

A. J. WIECHARDT,

Professor of Mechanical Engineering, University of Arizona.

Effects of Electric Power Used for Traction

SEATTLE, Wash.

TO THE EDITOR:

In the March 18, 1922, issue of the *Railway Age* there appears on page 727 an article entitled, "Effects of Electric Power Used for Traction" which deals with the question of inductive interference and electrolysis as related to railroad electrification. Various references were made in this article to the electrification of the Chicago, Milwaukee & St. Paul, and we feel it necessary, in order that there may be no misconceptions regarding the conditions actually experienced on this electrification with respect to the features discussed in the article, that the following statement be made; this as such alone and without reference to any question of the relative merits or demerits of the different systems of electrification.

The C. M. & St. P. has approximately 650 miles of main line electrification. This includes 550 miles of three-phase, sixty-cycle, 100,000-volt transmission line, which for the greater part of its length is located on the railroad right-of-way, in general about 100 ft. in width, opposite the pole line supporting the railway company's telegraph, telephone and secondary signal circuits. The latter are of the usual open wire construction and, of course, extend the full length of the railway, including the electrified zone. Between the telegraph, telephone and signal lines and the transmission line is the 3,000-volt direct current trolley system, on the poles supporting which are located 3,000-volt trolley feeders, a 4,400-volt single-phase, 60-cycle primary signal supply circuit, and the power indicating and limiting circuit. The latter is operated at 1,200 volts d.c. on the Rocky Mountain and Missoula divisions, and at about 3,000 volts alternating current on the Coast division, the current in both cases being very small.

The telephone and telegraph lines consist of metallic dispatcher's telephone and block circuits and the usual grounded railway telegraph circuits. The dispatcher's telephone circuit is regularly used for all train movements, the dispatcher's office on the Rocky Mountain and Missoula divisions being located at Deer Lodge, 226 miles from the eastern end of the electrification and 211 miles from the western end of the electrification. Before electrification the dispatcher's offices were located at about the middle points of the respective divisions and the length of railway controlled by one set of dispatchers was only about one-half the present length. On the Coast division the dispatcher's office is located at the extreme west end of the 209 miles of electrified line. Train orders are given over these dispatcher circuits the full length of the line. The dispatcher's circuit is transposed at intervals of about 900 ft., and telegraph and telephone wires where

they enter stations are fused and provided with simple standard protectors.

Electrical operation began on the Rocky Mountain division in December, 1915. At that time the feeders extending east and west from the respective substations, instead of being tapped directly at the latter to the trolley, were tapped a mile away from the substation so as to interpose a resistance which would diminish the liability of flash-over of substation motor-generator sets in case of short-circuit on the trolley. This arrangement existed pending the final development and manufacture of the so-called high speed circuit breakers which, during the year 1917, were installed in the various substations in the negative connection to the rail. The function of these breakers is, in case of short-circuit, to very rapidly interpose a small ohmic resistance in the trolley circuit, limiting the magnitude and duration of the short-circuit current to a value which will not cause flash-over of the generators and which can readily be handled by the regular feeder breaker.

Previous to the installation of these circuit breakers, flash-overs of the generators were of comparatively frequent occurrence. These resulted in very little if any damage to the generator, but at times produced a rather severe acoustic shock to those using the dispatcher's telephone circuit, so that a few of the telephones connected thereto were provided with a megaphone horn connected directly to the original receiver. No loud-speaking telephones have ever been installed on the electrified zone on account of inductive interference as stated in the article. The installation of the high speed circuit breakers, though not primarily installed for this purpose, resulted in the elimination of this trouble.

Any effects due to short-circuits on the 100,000-volt transmission system, which are of infrequent occurrence, have, as far as acoustic disturbances are concerned, been reduced to a point where they are considered negligible, largely as the secondary result of the installation of an improved relay system for high tension line, which provides a satisfactory selective action with respect to the rapid and positive isolation of the particular portion of line in trouble. Depending on the severity and location of the short-circuit, the fuses in the telegraph and telephone wires, as referred to above, will or will not blow, but they are found thoroughly to protect the apparatus.

The article in question also states that the noise conditions were such under normal operation as to require changes in the generator construction and the installation of resonant shunts. Under normal operation there has never been interference with the telegraph and telephone circuits of any magnitude sufficient to interfere with the operation of either the telegraph or telephone circuits. Under emergency conditions, such as those above referred to, the means described have taken care of the noise conditions by doing away with the acoustic shock and the undesired operation of the protective apparatus. No changes have ever been made in the generator construction, nor have such changes been considered or contemplated.

With respect to the installation of resonant shunts referred to in the article, three such shunts were installed in the substations on the Rocky Mountain and Missoula divisions at the instance of one of the telephone and telegraph companies, which found by tests the existence in some of their circuits of a harmonic of frequency corresponding to the tooth frequency of certain of the railway company's motor-generator sets supplying the trolley system. The shunts were found practically to eliminate this harmonic from the trolley circuit, and though those in charge of the railway telegraph and telephone circuits felt that the effect of the shunts in the operation of their own circuits was inappreciable, the railway company, in its desire to exercise such co-operation as it deemed reasonable and proper, and to take advantage where warranted of any means of possible improvement, per-

mitted the installation of these shunts and included them in the contracts for apparatus specifications for subsequent electrification of the Coast division. The request with respect to the installation of the shunts on the Rocky Mountain and Missoula divisions applies to those three of the 14 substations in which 1,500 kw. units were installed. In the case of certain of the 2,000 kw. sets of the other stations, the suggestion was made that the already comparatively minor effect of any harmonic due to these sets could be reduced to the very favorable average of the other sets by the simple expedient of shifting the generator couplings so as to secure the best relative position of the two respective generator armatures.

The article states that 60-cycle transmission lines, used in connection with the power supply to direct current trolley systems, give rise to inductive interference which is greater than that caused by transmission lines of 25 cycles serving the alternating current systems. Under exactly the same conditions, a 60-cycle, three-phase transmission line would, naturally, produce greater disturbance than a 25-cycle, three-phase line, but the actual facts with respect to the C. M. & St. P. are that inductive effects under normal operation are not such as to affect the practical operation of the telegraph and telephone circuits. In fact, when different sections of the transmission line were placed in operation, some of these sections being 100 or 200 miles in length, those listening in on the dispatcher's telephone circuit at the time were unable to tell when the current was switched on and off the line.

The writer of the article makes the statement that the conditions on the Chicago, Milwaukee & St. Paul are not comparable with those, for instance, on the New York, New Haven & Hartford electrification, but in what respect this is the case is not stated in sufficient detail to enable a definite idea of the conditions to be derived, either as to length, proximity, etc., of exposed circuits or the effect of conditions of traffic. It is not clear how the fact that fewer trains are run on the C. M. & St. P. than on the New Haven necessarily affects the question.

The simplicity of the interference problem in connection with the C. M. & St. P. electrification, both as regards the conditions to be met and their solution, is one upon which many visitors to our electrification have particularly and enthusiastically commented, both during their visits and in such subsequent reports as we have noted. In this connection it may be permissible for me to refer, as has been done before by others, to the following extract from a report prepared by the French commission which was sent to America in 1919 to study the principal electrified systems in this country:

"A considerable advantage of the direct current system is that it does not seem to have any but the slightest interference with the telegraph and telephone lines—in fact insignificant. We are well able to report that one may telephone very easily on the various lines of the railroad placed all along the tracks on an aerial wire without any protection.

"A multiplex printing apparatus for the telegraph service worked between Spokane and Helena with an earth return, was diverted especially for us in such a fashion as to use a wire placed on the poles of the electric railroad for a distance of 270 kilos. This operated perfectly during eight days without even being troubled by three short-circuits made very complete intentionally between the trolley wire and the rail in the course of the telegraph wire."

With respect to electrolysis, this is recognized to be a question which in the case of the d.c. system should receive careful consideration. Its practical importance, as determined on basis of the protective measures necessary, will depend on the circumstances surrounding the individual case.

In the case of the C. M. & St. P. electrification, the cases of electrolysis which have arisen have been of comparatively minor importance and have required only simple and inexpensive means of correction. For instance, regarding the

substation piping, particularly referred to in the article, it was found about one year after commencement of electrical operation, that at a few of the substations a small water pipe running parallel to the tracks between the substation building and the operators' bungalows was being attacked by electrolysis. As a result of tests, a copper leakage cable was installed and bonded to the pipe and the track rail, which construction was made standard at all stations. The small amount of pipe which had been severely attacked at three or four stations was removed and replaced by new pipe, with the result that it has been unnecessary to replace any pipe during the five years of service which has since elapsed.

R. BEEUWKES,

Electrical Engineer, Chicago, Milwaukee & St. Paul.

The Future of the Steam Locomotive

NEW YORK.

TO THE EDITOR:

The communication by Frederick A. Delano, which appears on page 1,004 of the *Railway Age* of April 29, presents some tremendously important subjects which railroad officials will think about most carefully. Coming from him, every railroad official will take these suggestions most seriously.

In connection with the steam locomotive, however, such remarkable improvements are available, exactly to meet the requirements of the times, as to justify the suggestion that before going to electrification or to other forms of motive power, the steam locomotive should be developed to its logical limits. Being a rather close observer of locomotive progress, the subscriber holds the conviction that the steam locomotive has never yet been brought to anywhere near its logical limits.

To accomplish this, it is necessary to know what has happened to the steam locomotive during the past few years, to make use of the opportunities available for its improvement and to ask the operating officials to use the new locomotive to the best advantage as manufacturing managers use their expensive machinery.

This is simple enough when locomotive improvements are thoroughly understood. It is most important to recognize the fact that the steam locomotive can be made to be something that it has never been before and that it can be made to do things which it has never been made to do. When this fact is accepted we shall see instantly that the steam locomotive has not yet even approached the limit of its capacity, efficiency and economy.

No one can be in better position than is Mr. Delano to realize and point out the necessity for locomotive improvement. The object of these paragraphs is to show that we have overlooked factors in the steam locomotive problem which will answer the criticisms made of it. It is my belief that several efforts which are now being made in the improvement of both boiler and machinery of steam locomotives on a number of the most progressive railroads will in a short time answer the criticisms and lead to the attainment of the specifications briefly outlined by him. G. M. BASFORD.

Red Tail Lights on Automobiles

CHICAGO.

TO THE EDITOR:

Referring to the editorial in the *Railway Age* of January 14, page 166, and to the letter to the editor by "P.S.C." in your issue of February 11, page 362, relative to the use of red tail lights on automobiles: Many things have been accomplished that seemed to have less likelihood of success than has the substitution of another color for red on the rear of automobiles. The cost per machine is not more than 35 cents to an automobile driver who will do the work him-

self. Certainly each individual automobile driver should be willing to do that much because of the good which can be accomplished by the change.

Red has always been recognized as an indication for "danger" and should be reserved for that purpose only; otherwise, what color have we left to use for protecting open ditches, material piled in the road and other things of like nature, to say nothing of our railroad crossings?

Actual experience has shown that the placing of red lights at various heights and locations in the vicinity of crossings does not improve the situation. Red lights on the rear of automobiles and trucks vary in height from the axle to the top of the body and there are no laws or regulations, to my knowledge, which govern this height. Assuming for the purposes of discussion, that a height for the gate lights on highway crossing gates was determined on, different from that of tail lights on automobiles, there would still be no reference point from which to gage this height. If "P.S.C." will go out on the highway some dark night and observe the red lights going up and down hill he will be convinced that there is no elevation which cannot be duplicated in appearance with an automobile. There is therefore no distinctive height which could be selected to distinguish lights on gates from those on automobiles.

The restriction of the use of red to points of actual danger will certainly increase its value where it is used. The most dangerous part of an automobile is its front end but we are sufficiently warned by the white lights used, even when the low power parking lights used in cities are displayed. It is therefore clear that what is required on the rear end is not a danger signal but a marker so that a driver may know which way an automobile is going and where it is. Therefore the use of any other distinctive light will answer the purpose as well as red.

We have received complaints from enginemen relative to the red tail lights of automobiles on highways adjacent to the main line. These lights, moving back and forth, often appear like a red light being waved as a danger signal to an engineman, and this is particularly true on a curve. Under these conditions, enginemen may become so accustomed to this condition that they may overlook a flagman or other's danger signal.

The use of red, green and yellow and the meaning of each light is becoming familiar to automobile drivers, particularly in the cities where these three lights are being used to indicate "Stop," "Caution" and "Proceed." The use of red with the word "Stop" as installed on a good many automobiles and showing only when the automobile is stopping is not objectionable and could be continued.

Red should be reserved for "Danger Here—Stop."

J. A. PEABODY,

Signal Engineer, Chicago & North Western.

A Plea for the Station Agent

CHICAGO

TO THE EDITOR:

I have read with interest and amusement the article entitled "A Plea for Recognition of the Traveling Auditor" which appeared in the *Railway Age* of January 21, page 239. I don't believe that the average agent at an exclusive or supervisory station will agree with many of the arguments put forth by the traveling auditor. His article would indicate that it is customary, on his road, to secure traveling auditors from the employees in the clerical departments. To say that such men are qualified to pass upon the question of who shall, or shall not, be promoted to the agency positions is rather far-fetched, and contrary to the well-established custom of promoting men from the ranks of the department in which they have served their apprenticeship.

The traveling auditor is well qualified, as a rule, to pass upon the question of accounts, but if he comes from the ranks of the clerical department, as stated by the writer referred to, he certainly is not capable of deciding who would make a competent agent. The accounting work to be done at a station is only one of the many phases of the business that an agent has to look after and while equally important with his other duties, is not more so. The soliciting of business, and the manner in which he meets the public are the most important features of his work; for the agent must be in close contact with the public in the community which his line serves, and he reflects the policy of his railway to a greater extent than any other employee in the service. Then, from an operating standpoint, the agent should be well qualified to handle men, have a certain amount of executive ability and be able to keep the operating costs down to the lowest possible minimum, and, at the same time, give the public the highest class of service that may reasonably be expected from a common carrier. The agents are as much a separate and distinct class of employees as are the dispatchers, yardmasters, roundhouse foremen, etc., and they have in most cases, or should have, gained their positions through successive promotion, after having served the necessary apprenticeship in their particular line of work.

It is true, as the writer referred to states, that some traveling auditors come into a station with an air of great importance (which deceives few old heads), and treat the average agent or cashier as if he were a criminal. However, after 40 years of service as an agent, I have never felt that his superior officers required him to do this. The traveling auditor is supposed to make a thorough and complete check of the station, seeing that every item is correct and calling the agent's and cashier's attention to anything that is not being handled according to the rules and regulations of the company. He is expected to co-operate with the station forces in bringing the work up to the highest possible point of efficiency. The station employees, and particularly the agent, should be glad to have the auditors check their station, for they are just as anxious to keep their accounts in proper shape as the auditing department and more so perhaps, for they are personally responsible for them. It is only the inexperienced traveling auditor who does some of the things that the writer referred to.

I have never been able to understand why the managements of our railways have given so little thought to their agents and why they do not place an old experienced agent in charge of the agents and the stations on their respective lines. It is probable that the managements have been so absorbed in their technical departments and so fully occupied with the apparently endless contentions of the more radical organizations that they have not given due consideration to their agents, whose department is the producing end of the railway and whose duty it is to see that every pound of traffic in the territory is secured for their line. Some few railways have realized the importance of the agents as a class to a certain extent and have appointed what are known as supervising agents, working directly under the superintendents. The supervising agent is appointed from the ranks of the agents and is generally a man of wide experience in that line of work. In selecting a man for this position, consideration is usually given to his years of service and experience, and to his standing with his fellow agents. The agents in his district report direct to him on all matters pertaining to the proper handling of their department. This is a step in the right direction.

AN AGENT.

THE NORTHERN PACIFIC will sell week-end excursion tickets, at one and one-tenth the one way fare, from Minneapolis, Minn., to Taylor Falls, Big Lake, St. Cloud, Chicago City, Pine City, Rush City, and Lindstrom beginning May 19.



Farm Scene in the State of Michoacan

Mexican Railways Prepared for Improved Business

Roadbed and Motive Power in Splendid Condition—Shortage of Rolling Stock a Handicap

By Charles W. Foss

Part I

THE MEXICAN RAILWAYS have returned to something like pre-revolution standards. The roadbed is in excellent shape—the National Railways are to be congratulated for the manner in which they have restored the lines destroyed during the revolution and for the excellent manner in which these lines are maintained.

Because of the acquisition of a large number of new

some new lines are being constructed. These details will be discussed later.

During 1921 the National Railways had severe labor troubles, the outstanding feature of which was a general railroad strike in February and the first half of March. This strike tied up the railways completely and the resulting congestion was indeed serious. It ended on March 19 in a victory for the men. Labor conditions are at present quiet.

Light Traffic

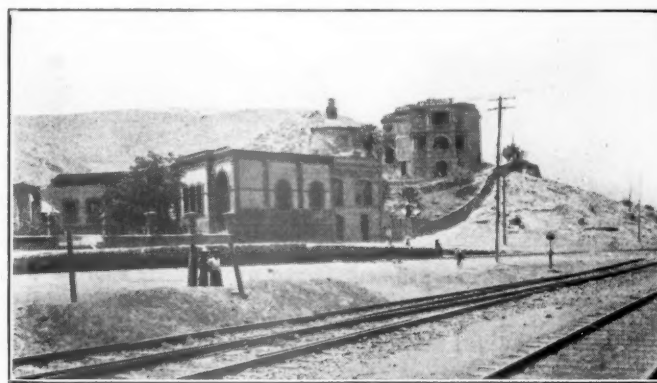
Referring again to the shortage of equipment, it should be stated that the lack of cars is at present not as serious a factor as might otherwise be the case. The reason is the lack of traffic. There is, in fact, much ground for the



A View in Mexico City

locomotives in 1921, the motive power situation is satisfactory. There is, however, a serious shortage of rolling stock. The Mexican railways lost some 10,000 cars because of the wide-spread activities of the various warring elements during the past few years, which cars they have not been able as yet to repair or to replace. The result for one thing has been a large per diem debit balance with the United States lines which, however, is gradually being reduced as the United States cars are returned across the border. The narrow gage lines are particularly short of cars and the statement was made to the writer that if these lines had more cars they could increase their traffic materially.

The rehabilitation of the Mexican lines has included great activity in the way of new stations and shops. At present



At Torreon

opinion that, if anything, the Mexican railways are in reality rehabilitated to a greater extent than the rest of Mexico. Business conditions in that country today are exceedingly poor; it is suffering from business depression in considerably greater degree than the United States. Whereas business in the States is everywhere showing signs of improvement and the optimist is coming into his own, this is not the case in Mexico. The result is that the railways, even with the

shortage of rolling stock, are prepared to handle a much greater business. If traffic increases, however, they are likely to suffer from car shortage acutely.

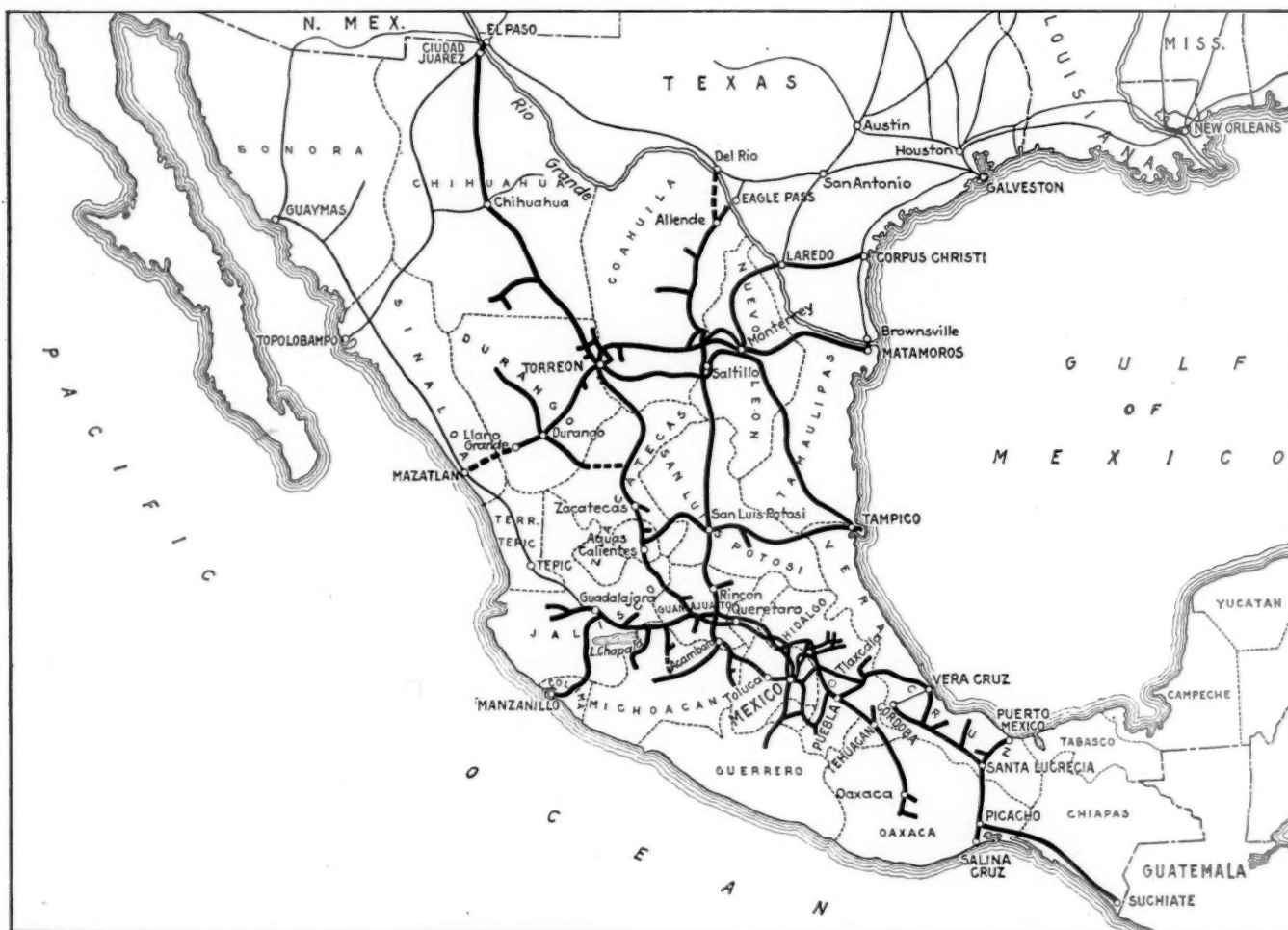
4½ or 5 Days to the Border

With their rehabilitated plant, the National Railways of Mexico are supplying at present excellent service. From the Rio Grande to Mexico City is about 800 miles. Freight is moving from the border to Mexico City in 4½ or 5 days. There has been a sizeable movement this year from the Lake Chapala district of perishable vegetable traffic destined to Kansas City, Chicago, etc. This traffic, moving in refrigerator or ventilated cars, is also reaching the border in 4½ or 5 days with the result that the growers have been

aggregated and made more alarming by all kinds of conflicting rumors. If President Obregon can gain and continue to hold the respect of the business classes improvement will come rapidly.

Mexico an Extremely Rich Country

Mexico is a rich country. It has extremely promising agricultural areas. Its advantages for the raising of stock are practically unexcelled. Its mineral resources are such that prior to the revolution it led the world in the production of silver and was among the leaders in the production of gold. It has large resources in copper, tin, platinum, lead, etc. In Coahuila there are large deposits of bituminous coal. Iron ore is found in several states of the republic, and



Map of the National Railways of Mexico

realizing handsomely on the advantage of having their crops ready about a month ahead of the growers in Florida and southern Texas.

Business Revival Depends Upon Government Stability

The acute business depression in Mexico today, is partly due to the fact that there is a world-wide depression, but it is also partly the result of the unsettled conditions in Mexico. The question, when all is said and done, resolves itself into one of the stability of the present government. It should be said also that a great deal depends upon whether the United States is going to recognize the present Mexican government or not. President Obregon in his term of office has succeeded in restoring in Mexico a more stable state of affairs than has existed at any time since the start of the revolution in 1910. In recent months there have been sporadic outbreaks here and there, which outbreaks have been duly ex-

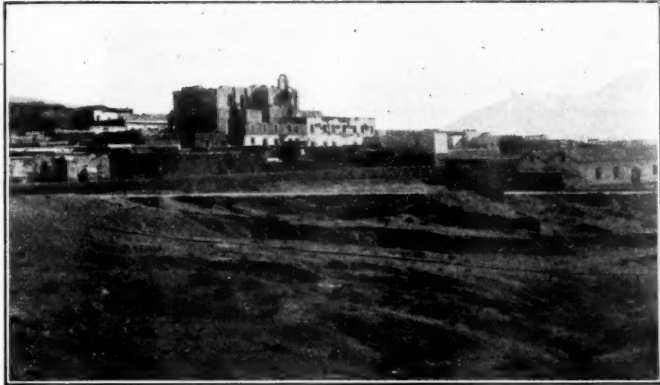
Tampico is so famous that it is hardly necessary to speak of the resources in oil.

The Tropic of Cancer crosses Mexico about midway of its length, which at its greatest dimension is over 1,900 miles. The total area of the country is about 767,000 sq. miles, equivalent to that part of the United States east of the Mississippi and south of New York. The climate of the country is of many varieties as is to be expected from the fact that the republic extends through so many degrees of latitude, and because of the varying altitudes.

A large part of Mexico is included in the low lying areas adjacent to the coast and in the south. The central portion of the country is a plateau, while to the west of the center is the Sierra Madre range.

Inhabiting this vast area is a population of about 15,000,000 people. Mexico City, the capital and largest city—incidentally it is 7,349 ft. above sea level—has a population

of about 1,000,000. The second city is Guadalajara with about 120,000; the third, Puebla, with about 100,000. Other important cities are Monterrey, 85,000; Saltillo, 35,000; San Luis Potosi, 83,000; Queretaro, 40,000; Durango, 34,000; Chihuahua, 39,000; Torreon, 34,500; Aguascalientes, 45,000; Vera Cruz, 47,500; Oaxaca, 40,000, etc. It is interesting to observe that several of these cities are mile-high cities in the true sense of the term. San Luis Potosi is 6,123 ft. above sea level; Saltillo, 5,200 ft.; Queretaro, 6,000 ft.; Durango, 6,200 ft.; Torreon, 3,742 ft.; Chihuahua, 4,634 ft.; Aguascalientes, 6,181 ft.; Oaxaca, 5,069 ft., etc. A



A View at Zacatecas

glance at the map showing the location of these various cities will give an adequate idea of how extensive is the central plateau.

The Railway System

The railway lines of Mexico center upon the City of Mexico. What are termed the main lines of the National Railways are the lines from Mexico City to Nuevo Laredo, 803 miles, and from Mexico City to Juarez, 1,223 miles. On the line to Nuevo Laredo are the cities of Queretaro, San Luis Potosi, Saltillo and Monterrey; on the line to Juarez, Zacatecas, Aguascalientes, Torreon and Chihuahua. A transverse line extends from San Luis Potosi to Tampico on the east and to Aguascalientes on the west. From Torreon, there are similar transverse lines to Saltillo and Monterrey to the east and to Durango on the west. Eagle Pass is served by a connecting line. From Monterrey there is a connecting line eastward to Matamoros opposite Brownsville, Tex., and also a line to Tampico.

The south is served by various subsidiary lines, some of standard and some of narrow gage. These include among others the Guadalajara division to the city of that name, to the Lake Chapala district, etc.; the Pacific division to Toluca, etc., and the Cuernavaca division to the south. The line to Vera Cruz is known as the Interoceanic branch. On this line are the important cities of Puebla and Jalapa. The Mexican Southern, operated also by the National Railways, is a narrow gage line between Puebla and Oaxaca. The Vera Cruz & Isthmus extends from Vera Cruz to Cordoba. From Santa Lucrecia on this line the Tehuantepec National extends to Puerto Mexico on the Gulf of Mexico and to Salina Cruz on the Pacific Ocean. The Pan-American Railroad extends from Gamboa, on the Tehuantepec National south-easterly to the Guatemala border. The lines mentioned are all operated by the government. The National Railways operate a total of 8,302 miles, including 6,885 miles of standard gage and 1,417 of narrow gage.

The privately operated lines in Mexico include the Southern Pacific of Mexico and the Mexican Railway. The latter extends from Mexico City to Vera Cruz and has only been returned to its owners for operation within a comparatively recent period.

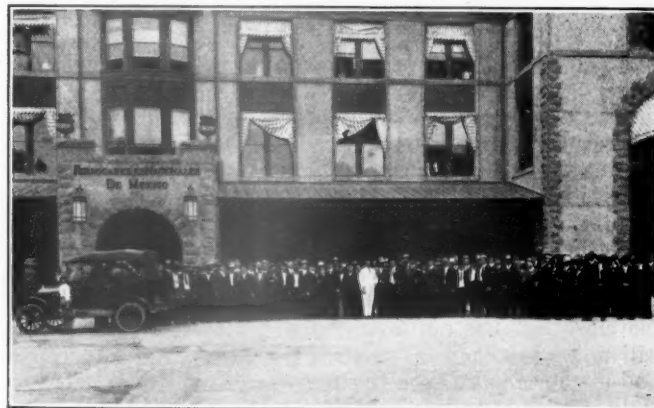
Agricultural Resources

In referring to the relationships between the Mexican railways and the resources of the districts served by the various lines, one is impressed rather by the potential than by the actual. There is one instance, however, that is something of an exception and that is the Lake Chapala district, which, as will be noted from the map, lies west of Mexico City on the line to Guadalajara. This district is at present shipping perishables destined for markets in the United States, such as Chicago, Kansas City, etc. The movement has not been large. Up to the end of February some 22 cars had moved to points in the States and there were then about 20 or 25 more cars expected for similar movement. The traffic consisted of tomatoes and onions, the growers of which are able to reach their market about one month earlier than the growers in California or Texas. There has also been some movement of cantaloupes although not a large one. Next year a large early movement of cantaloupes is expected, to reach the market about one month or six weeks ahead of the California product.

This traffic in perishables from the Lake Chapala district to points outside of Mexico is being offered this year for the first time. In other words, it is not traffic which moved prior to the revolution and which is now being restored. Its possibilities look good because of its being so far ahead of the producing areas to the north. Refrigerator cars, ventilated but not iced, are used and the time required to Laredo averages $4\frac{1}{2}$ or 5 days.

Formerly there was a movement of early vegetables and onions from the territory on the line between Tampico and Monterrey. There was no such traffic this year, but it is understood that arrangements are under way looking to the planting of a large acreage for next year.

Torreon is the center of another important agricultural district—in this case, the Laguna cotton district. This cotton has a staple 1 or $1\frac{1}{8}$ inches in length and the crop formerly



One of the Parties Visiting Mexico at President Obregon's Invitation Assembled Before the Colonia Station, City of Mexico

approximated 150,000 bales yearly. The crop this year is estimated at only 20,000 bales.

Mexico City itself is the center of an important truck garden area. The line to Guadalajara serves a corn and wheat country which, in recent years, has also seen a development with reference to vegetables. Around Puebla also there is a grain country. Iraquato is adjoined by a strawberry and cantaloupe district, but the products are used mainly in local consumption; no effort is made to ship strawberries to the States. Oranges are grown near La Barca, but these also are for local consumption only.

Considerable might be said concerning Mexico's agricultural prospects with irrigation in what is now desert country. The Rio Grande valley is an example, the possibilities of

which one can only appreciate by seeing what has been done through irrigation on the United States side of the river. At present there is a big irrigation project under way at Santa Rosalia in Chihuahua. Water from the Rio Conchos will be used and a large yield of wheat is expected.

Mexico has large lumber resources, including pine and fir in Chihuahua and Durango and the tropical woods in the south.

Grazing

Prior to the revolution Mexico was a grazing country of first importance. Because of revolutionary activities the herds were dispersed or destroyed. Although it formerly exported large quantities of cattle, it is now importing a sizeable proportion of its meat supply. The cattle country was constituted in a vast area in which are the cities of Chihuahua and Durango. Cattle were shipped out through El Paso to northern ranges for fattening, or south to the cattle country adjacent to the railway line between Tampico and San Luis Potosi.

The Mexican railways at one time relied on a large traffic in this connection and also on a sizeable business in cattle moving from the last named district and from the Isthmus of Tehuantepec to the packing houses at Mexico City, but the herds have been so depleted that this traffic has long since ceased. Cattle are now being brought into the northern ranges but not much is being done as yet with reference to restocking the ranges in the south.

Oil

Tampico is an important source of crude oil for refineries in the United States. In addition to the oil exported in tankers, there is also an important movement inland over the National Railways. Mexico's fuel is oil, a statement which applies both to the railroads and to industries in general. New sources of oil supply are being found as far north as the state of Nuevo Leon and in the extreme southeast in the state of Chiapas.

Mineral Resources

Mention has been made above of Mexico's enormous mineral resources. The majority of the states in the republic have extensive mineral deposits of one kind or another. There were many important mineral developments prior to the revolution but it seems to be the general impression that Mexico had hardly begun the exploitation of her vast natural wealth. At any rate, the mineral industries are generally idle today and the railroads are not carrying their former mineral traffic. The most important lines in this traffic were the main lines themselves. There was formerly a heavy movement of iron ore to smelters at Monterrey and Aguascalientes. Saltillo had smelters for silver, lead and copper and there were also such smelters at Aguascalientes, Torreon, Vallardena, San Luis Potosi and Monterrey. Large mines also were worked at many points other than along or adjacent to the main lines. There were a large number of mines in the territory west of Guadalajara and around El Oro, Oaxaca, etc. The movement of the products of the smelters north to the border interchange points formerly represented a very considerable traffic, which at times reached the proportions of solid trainload lots.

Interchange With United States Lines

With further reference to Mexico's enormous oil resources, one must not fail to notice that Mexico also has enormous bituminous coal deposits in the state of Coahuila.

While what has been said concerning Mexico's resources is necessarily brief, it should give a good idea of the large traffic which the Mexican railways formerly had and of the present potentialities upon which these railways will be able to realize with a return to business confidence and stability.

The National Railways of Mexico interchange business with the railroads in the United States at Laredo, Juarez,

Eagle Pass and Matamoros. Laredo is the more important of these four and secures a considerably larger portion of the Mexican business than either of the other three. At Laredo connection is made with the International & Great Northern and via the Texas-Mexican, a property lying in Texas, operated independently but owned by the National Railways, with the Gulf Coast Lines, with the San Antonio & Aransas Pass and through the latter with the Missouri, Kansas & Texas, etc.

Eagle Pass is a Southern Pacific connection. At Juarez, or El Paso, connection is made with the Southern Pacific, the Santa Fe and the El Paso & Southwestern, etc. The connection at Matamoros or Brownsville is with the Gulf Coast Lines. Interchange and per diem arrangements with the United States lines have been effective since January 1, 1921, but through billing has not yet been restored nor have arrangements been made for the quotation of through rates.

Cars on Road 6 or 7 Months as Result of Strike

At the time the per diem arrangements were restored the Mexican railways were suffering from a severe shortage of



Main Offices of the National Railways of Mexico, City of Mexico

power, which situation was relieved by the loan to the Mexican lines of a large number of locomotives. The congestion at the border points at that time was acute and the situation was made much more severe by a general strike of the Mexican railway men which took place in February and March. The strike tied up the railways completely, although there were instances where shippers secured their own locomotives and crews and operated trains themselves.

At the end of the strike, which was finally settled in favor of the unions, the Mexican railways were in a condition so poor as to be almost beyond belief. This condition lasted for some time and at one period it was a familiar thing for cars to be on the road no less than six or seven months. The improvement which now provides a service of from 4½ to 5 days from Mexico City to the border represents the measure of recovery which has since taken place. One American railroad man said to the writer: "I have never seen a greater improvement in the same length of time in any country, such as that which has taken place in Mexican railway conditions since July 1, 1921."

Private Operators

Besides the improvement in relieving the congestion of the early part of 1921 there was also an important factor of improvement in the elimination of the private operating companies. These had been operating trains for some time, although they did not succeed in getting very far during the strike. The scheme was for the private operator to secure his cars from the United States roads under a bonding ar-

rangement, the bond required varying with the type of car. Thus, for a steel underframe or all-steel car a larger bond was required than for a wooden car, etc. The private operator leased his locomotives and paid his own crews. His charges were from 25 to 50 per cent above the regular tariffs and for a time the operators did a thriving business. The extent of the business may be realized when it is noted that in July, 1921, private companies operated approximately 170 locomotives. At present few private individuals are operating in this manner and this part of Mexico's railway history is nearing its close.

Present Traffic

The difficulty of the Mexican railways at present is their lack of traffic. The figures show that in the month of Feb-



Desert Lands in Coahuila—Typical of Much of the Land Seen From the Train on the Central Plateau

ruary this year the northbound movement was 37,347 cars; the southbound, 53,527 cars, and the total, 90,874. The trade with the United States is normally of large proportions. In January, 1922, however, there were imported only 1,500 cars, the lading being principally of coke, lumber, lard, wheat, corn, cattle, coal and miscellaneous. It will be noted that the commodities mentioned include in great measure traffic that should originate in Mexico rather than from import trade. The exports were especially small and amounted in January only to about 150 cars, made up of bullion, fibre, tomatoes, hides and miscellaneous.

Reference has been made to the car situation. The figures relative to the number of cars in service are given in a table. On February 15 there were in service 924 foreign and 11,653 system cars, a total of 12,537 cars. This total number of cars is considerably smaller than the Mexican railways will need with reviving business. However, it is some improvement over July, 1921, when there were no less than 9,000 foreign cars on the Mexican lines.

198 Locomotives Purchased

The reasons for the improvement in operating conditions which gradually began to take place after July 1 were pri-

marily three—one, the improvement of morale of the officers and men; two, the acquisition of a large number of new locomotives, and, three, the smaller amount of traffic since presented for transportation. The Mexican railways leased from American lines about 40 locomotives, including 11 from the International & Great Northern, ten from the St. Louis Southwestern, nine from the Illinois Central, eight from the Katy and three from the Gulf Coast Lines.

The next step was to place large orders for locomotives, including 68 new standard gage and 20 narrow gage locomotives built by the Baldwin Locomotive Works; 27 standard and two narrow gage locomotives built by the American Locomotive Company and 110 second-hand standard gage locomotives purchased from the Illinois Central, the El Paso & Southwestern and the General Equipment Company. Thus, they acquired 95 new standard gage, 22 new narrow gage and 103 second-hand standard gage locomotives, which additions to the motive power put a very different aspect on the situation than had previously been the case. It is not meant to imply that the motive power situation at present is ideal. The latest figures show a total of 505 standard and 102 narrow gage locomotives in service and 510 in shops.

In Excellent Physical Shape

The Mexican railway lines are in excellent physical shape, which fact is all the more interesting when one is told about the manner in which the lines were torn up and destroyed during the revolution. The writer was advised that all of the track which had been torn up had been rebuilt and that the entire mileage of the National Railways was now in operation. It was further added that the lines had succeeded in rebuilding one-half of the section houses and stations which had been destroyed.

Track standards on the various lines vary considerably. There is much 56 and 60-lb. rail still in track on the standard gage lines. This was noted particularly on the line out of Matamoros where 56-lb. rail was found laid on mesquite ties. The main line from Mexico City to Laredo is now laid with 75 and 85-lb. rail for practically its entire length. Work is now proceeding in this respect on the line from Mexico City to El Paso. South of Aguascalientes is now generally provided with the heavy steel, but much of the lighter rail still exists north of that point. Pine ties are generally used on the lines on the central plateau, and hardwood ties on those nearer the coast. Tie plates are used on curves. But few treated ties have been used, although at Aguascalientes there is a tie-treating plant with a capacity of about 120,000 ties a month. The tie situation on the railways is not as good as the Mexican railway officers would like it to be. At present some 500,000 to 600,000 new ties are being put in monthly; on some stretches the tie replacements have run as high as 40 per cent. The ballast conditions vary widely; considerable of the main line is ballasted with rock, but this is not general. Because of the lack of water and of freezing maintenance conditions on the central plateau are favorable.

[The second and concluding part of this article will appear in an early issue of the *Railway Age*.]



Division Terminal at Vanegas

Freight Car Loading

WASHINGTON, D. C.

THE NUMBER OF CARS loaded with revenue freight during the week ended April 22 showed increases both as compared with the previous week and with the corresponding week of last year, in spite of the light coal loading on account of the strike. The total was 714,088 as compared with 704,632 in 1921 and 717,772 in 1920. In 1920 the loading was light on account of the switchmen's strike. Coal loading during the week of April 22 showed an increase of 594 as compared with the week before but a reduction of 74,944 as compared with last year. However, the increase in merchandise and miscellaneous as compared with last year was 69,867, or nearly enough to make up for the decreased coal movement. As compared with last year there were also increases in the loading of grain and grain products, coke, forest products and ore, but a decrease in livestock. Although the principal reductions in freight rates made since Ex Parte 74 have been on grain and grain products and livestock, larger increases in the loading have been shown on other commodities which have had little or no rate reduction. The summary for the week as compiled by the Car Service Division of the American Railway Association follows:

The decrease in coal production also accounts for a further increase in the freight car surplus during the period from April 15 to 23 from about 333,000 to 371,764, of which 229,892 were coal cars and 98,406 were box cars. The number of surplus box cars was about the same as the week before, most of the increase being in coal cars.

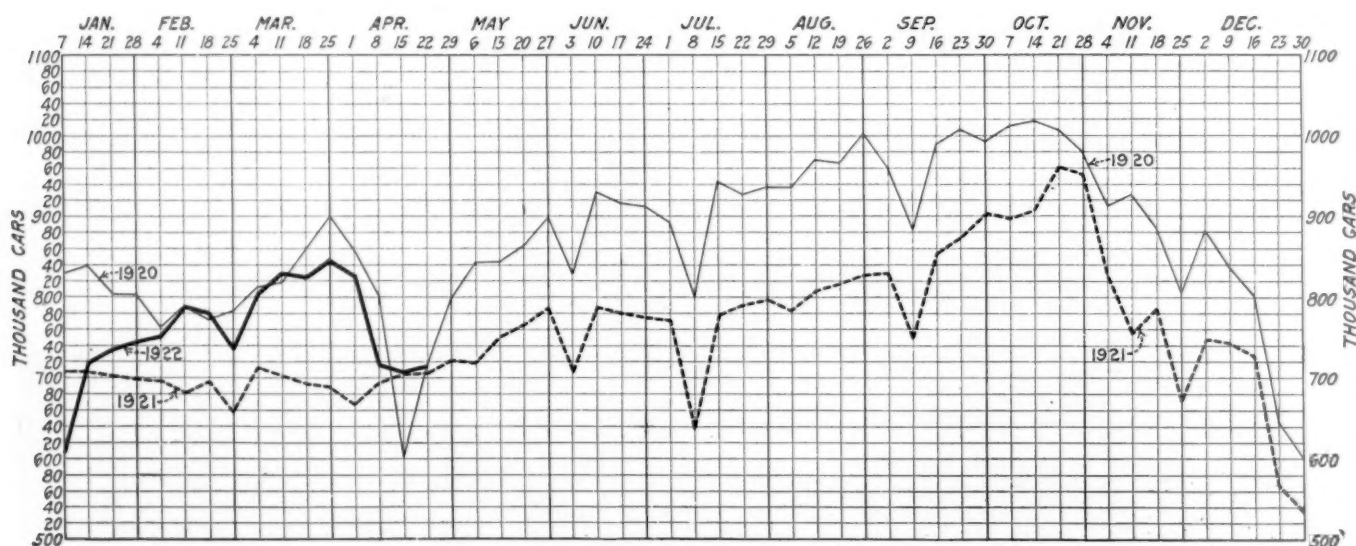
A TRAVELING ROPE, 23 miles long is one of the things boasted of in British Columbia. It is the "aerial tramway," 11½ miles in length, from the Premier Mine to the dock at Stewart. This tramway has a drop of 1,400 ft. from leading to discharge terminals, and it cost \$300,000. The rope is operated by a 60 h.p. electric motor; there are 153 towers in the line, 12 tension stations and 3 angle stations.

ONE OF THE AIRPLANES of the post office department was flown from Chicago, Ill., to Washington, D. C., on April 13 in six hours, two minutes. The distance is calculated at 715 miles, making the average speed 119 miles an hour. On April 17 a seaplane was flown from Palm Beach, Fla., to New York City, 1,210 miles, in 11 hours 16 minutes, including a stop of one hour 20 minutes. A part of this flight was made in a dense fog in which the aviator was obliged to steer by compass.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, APRIL 22, 1922.

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded		
										This year, 1922	Corresponding year, 1921	Corresponding year, 1920
Eastern	1922	6,747	2,799	6,309	1,160	4,765	1,100	67,361	75,942	166,183	.....	.....
	1921	5,605	2,765	39,356	841	5,466	943	56,516	63,007	.....	174,499	156,355
Allegheny	1922	1,925	2,465	11,436	4,083	2,676	2,368	50,424	62,016	137,393	.....	.....
	1921	1,986	3,185	42,340	2,293	2,320	826	42,526	46,364	.....	141,840	141,704
Pocahontas	1922	186	92	22,594	243	1,183	30	6,043	4,083	34,454	.....	.....
	1921	99	92	17,526	149	1,157	17	5,072	4,030	.....	28,142	29,769
Southern	1922	2,943	2,042	15,698	514	18,359	682	37,758	42,664	120,660	.....	.....
	1921	2,848	2,044	17,646	576	13,601	796	35,311	38,509	.....	111,331	123,447
Northwestern	1922	8,485	6,716	2,776	1,273	16,403	3,146	29,389	31,664	99,852	.....	.....
	1921	7,864	7,117	3,058	529	12,920	1,751	26,313	28,279	.....	87,831	110,001
Central Western	1922	9,257	10,536	3,321	161	5,349	1,820	32,390	37,113	99,947	.....	.....
	1921	9,744	12,101	14,190	155	5,551	960	30,933	29,889	.....	103,523	100,821
Southwestern	1922	3,728	3,464	1,311	175	7,124	624	16,119	23,054	55,599	.....	.....
	1921	4,525	2,428	4,273	139	6,152	545	16,717	22,687	.....	57,466	55,927
Total Western Districts	1922	21,470	20,716	7,408	1,609	28,876	5,590	77,898	91,831	255,398	.....	.....
	1921	22,133	21,646	21,521	823	24,623	3,256	73,963	80,855	.....	248,820	266,749
Total all Roads	1922	33,271	28,114	63,445	7,609	55,859	9,770	239,484	276,536	714,088	.....	.....
	1921	32,671	29,732	138,389	4,682	47,167	5,838	213,388	232,765	.....	704,632	.....
1920	26,265	31,657	155,765	8,684	60,072	21,257	139,760	274,312	.....	.....	717,772	.....
Increase compared....	1921	600	.....	.....	2,927	8,692	3,932	26,096	43,771	9,456	.....	.....
Decrease compared....	1921	.....	1,618	74,944	.....	.....	.....	.....	.....	.....	.....	.....
Increase compared....	1920	7,006	.....	.....	.....	.....	.....	99,724	2,224	.....	.....	.....
Decrease compared....	1920	.....	3,543	92,320	1,075	4,213	11,487	.....	3,684	.....	.....	.....
April 22	1922	33,271	28,114	63,445	7,609	55,859	9,770	239,484	276,536	714,088	704,632	717,772
April 15	1922	29,869	25,014	62,851	8,072	54,905	7,164	244,228	274,610	706,713	702,116	601,695
April 8	1922	31,598	25,024	69,456	8,599	54,680	8,259	243,718	272,934	714,268	694,881	801,559
April 1	1922	35,034	25,935	184,952	10,652	54,016	5,811	241,037	269,574	827,011	663,171	858,827
March 25	1922	38,066	25,958	204,586	8,676	54,814	5,282	239,846	268,807	846,035	686,567	893,386



Revenue Freight Car Loadings Up to April 22, 1922

Group Insurance as Applied to Railroads

A Brief Outline of Its Advantages and as to How Some of the Railroads Are Using It

By William F. Chamberlin

Superintendent, Group Department, the Travelers Insurance Company

A WIDE INTEREST prevails among railroad managers and employees in group insurance. One railroad after another is taking up the investigation of the subject with the result that there are now several cases of group insurance which have been adopted by railroads in one of the various possible forms best suited to the factors and circumstances within the particular organizations. Among the railroad companies that are carrying group insurance at the present time are: the Lehigh Valley; Union Pacific; Bangor & Aroostook; Delaware & Hudson; Delaware, Lackawanna & Western, and the Erie. Group insurance is so flexible that it may be made to reach with its protection every individual or any class of employees in an organization. Herein lies its chief appeal and satisfaction to organizations of railway employees.

The legal definition of group insurance states: "Group life insurance is that form of life insurance covering not less than 50 employees with or without medical examination, written under a policy issued to the employer, the premium on which is to be paid by the employer or by the employer and employee jointly, and insuring only all of his employees, or all of any class or classes thereof determined by conditions pertaining to the employment, for amounts of insurance based upon some plan which will preclude individual selection, for the benefit of persons other than the employer, provided, however, that when the premium is to be paid by the employer and employee jointly and the benefits of the policy are offered to all eligible employees not less than 75 per cent of such employees may be so insured."

Group life insurance must always be written according to some definite formula. The following plans have been found to be practical:

1. An unchanging amount of insurance such as \$1,000 or some other fixed amount for each employee.
2. An amount of insurance based upon wage or salary, such as 75 per cent or 100 per cent of salary.
3. A progressive amount depending upon length of service. For example:

At the end of 3 mo. service—\$500 of insurance
At the end of 1 yr. service—750 of insurance
At the end of 2 yr. service—1,000 of insurance
and thereafter increasing by \$250 a year until
a maximum of \$1,500 or \$2,000 has been attained.

A short waiting period, such as three months, six months or one year, serves to eliminate the class termed "floaters."

The amounts of group life insurance in force as reported by the various companies to the state insurance commissioners on January 1, 1922, were as follows:

The Travelers	\$424,443,627
Equitable	376,107,369
Ætna	318,085,180
Metropolitan	289,499,073
Connecticut General	73,106,546
Prudential	45,382,320
Missouri State	14,038,783

The larger amount of this total in excess of one billion and a half is written for employees in industrial enterprises.

Railroads Adopt Group Insurance

Group insurance is the cheapest form of indemnity for loss of life or for accident and sickness. There are several reasons for this. The life insurance is written on a one-year renewable term plan and has the wholesale nature of trans-

action. The premiums on each individual are collected as one. All records and correspondence go to and from the insurance company through one channel only—the employer. The elimination of all personal medical examination further reduces the cost of group insurance.

The amounts of group insurance for the various railroads carried in the insurance companies alluded to vary from \$500 to \$3,000 per individual. The amount of an individual's insurance may depend upon his classification as an employee, or the length of his time of service. Some railroad employers have paid 100 per cent of the premium; other roads have arranged for co-operation with their employees by furnishing the machinery for collecting the premiums and participating therein.

The Lehigh Valley has recently arranged a plan of life and accident insurance as follows:

	Amount of Life Insurance	Principal Sum of Accident Insurance	Total Insurance
Class A—Engineers, conductors, shop foremen and supervisory forces	\$2,000	\$2,000	\$4,000
Class B—Trainmen not included in Class A	\$1,500	\$1,500	\$3,000
Class C—Employees not included in Class A or Class B	\$1,000	\$1,000	\$2,000

In the Lehigh Valley plan the option was submitted to the employees as to whether or not they would be covered under the insurance. This required the solicitation of the entire 20,000 employees, and was successfully accomplished by the Travelers Insurance Company in 10 days.

The Union Pacific is insured under a plan of group life insurance with the Equitable Life Assurance Society of America and for group disability insurance with the Continental Casualty Company. The life insurance is based upon one-year's wage not to exceed \$2,500, or to be less than \$500. Premiums are paid entirely by the company.

Under the plan used by the Delaware & Hudson, insured by the Metropolitan Life Insurance Company, every employee with two years' length of service receives \$500 life and total disability insurance, the premium being paid for by the railroad. By co-operation with a sufficient number of his class and by contribution an employee of the Delaware & Hudson can have a total life insurance of from \$1,000 to \$5,000.

The Delaware, Lackawanna & Western has arranged for group life insurance on the co-operative basis for an amount of \$2,000. This insurance is understood to cover train dispatchers, yardmasters and other supervisory forces in all departments. The Lackawanna group policy is with the Ætna Life Insurance Company.

The Bangor & Aroostook carries group life insurance in the Travelers Insurance Company according to the following formula. The employer pays all of the premium.

	Class I Locomotive Engineers	Class II Locomotive Firemen
3 mo. and less than 6 mo.	\$1,000	\$500
6 mo. and less than 1 year	2,000	1,000
1 year and over	3,000	2,000

The Erie has a group insurance policy in the Travelers Insurance Company covering certain classes of office employees for \$1,000 and \$2,500, and with the Ætna covering shop employees. Announcement was made on January 1, 1922, of the coverage for operating employees, but it is

understood that this has not as yet been placed into effect.

Reasons Why Railroads Have

Adopted Group Insurance

There have been many cases of employee relief organizations that for one reason or another have not been wholly successful. One railroad president is reported to have said: "Another reason why a railroad company might well provide insurance to its employees is that they are constantly creating forms of co-operative insurance, which are not organized on a sound basis, which become insolvent or require the employee to pay abnormally high rates. The employee who is dependent upon co-operative insurance of this sort managed by his associate employees has lost in a large degree his independence and individuality. Such insurance may constitute the only provision for his family. To make that provision sure he is compelled to make his judgment and his views accord with the judgment and views of a majority of the co-operative associates. This may be very prejudicial to a railroad company as well as very prejudicial to an employee."

The group plan must automatically overcome any opposition. It is insurance at the lowest known rate with the most liberal terms, and in the case of death the claim is paid no matter what the cause or where the occurrence. There is no need for physical examination because one of the chief features of group insurance is that no employee shall be excluded because of an adverse condition of health. No man in any occupation carries a sufficient amount of insurance. A railroad employee should retain insurance that he has obtained from any source, and should take advantage of an opportunity to buy additional insurance at the lowest cost.

Group insurance is entirely distinct from workmen's compensation insurance and in no way affects it. In the usual group contract there is protection for death occurring at any time and covering any cause, even that of suicide. No existing legal rights are impaired as they now stand under the state and federal liability laws. Group insurance works independently of any other contract, and the fact that it will become part of the resources of an employee will have no influence on the strength of his claims to any other rights or indemnities.

It is evident to an insuring company that wherever group insurance makes its way, an organization is tempered throughout by good-will. A group insurance policy enlists the interest of the dependents and the family of the employee. The employee feels a connecting tie between the employer and his own nearest interests. Good-will is bound to result. There enters into the relationship between employer and employee the element of human interest over and above that of pay for work.

Group insurance is a measure of undeniable justice. Adequate insurance such as is provided under the group plan cannot be procured at the same low cost in any other way. It must be secured to employees through their employer—otherwise they forego its benefits.

The physical comfort of employees has for many years past been the concern of management. Not only healthful conditions, but comfortable—even restful and pleasing surroundings—are found in many places of employment of men and women. Quite as important as physical comfort is the peace of mind that comes with a sense of security created by protection and provision. More and more is economic security coming to be regarded as a necessity in the life of every individual—whether he possesses great wealth or depends entirely on a wage for the maintenance of life.

Group insurance, where it is carried by an insurance company equipped to render a highly developed service, co-operates with the assured in the attainment of the safest possible working conditions through a service of inspection. Very often a company, because of years of familiarity, is

blind to certain conditions of hazard that are immediately evident to an outside inspector. Unguarded transformers, switchboards and high tension apparatus; unguarded engine flywheels and belts; linemen working on high tension lines with only the inadequate protection of a pair of gloves—such conditions as these are frequently existent and do not seem to impress the people in continual contact with them with their great element of danger. Inspection should rightfully be given to conditions outside the plant, including poles and transmission lines and whether or not the linemen and other outside employees are equipped with the proper protective clothing and devices so that they may reasonably be protected against accident when working on the lines. A great source of danger lies in the carelessness of people who become accustomed to dangerous conditions, especially when such thoughtlessness admits, for instance, of the neglect of shutting off a current from lines when repair must be done on them.

A recent accident, although happening in England, well illustrates this point. Eight men out of a track gang of nine were killed while working on the line. In this case the foreman, a railroad man with 19 years' experience, depended upon hearing approaching trains when a train was passing the gang on an adjacent track. Group insurance is effective because it encourages safety effort along positive lines. It is found that men work with greater freedom and better accomplishment when assured of a thoughtful protection from such fatal danger.

Engineering inspection should be supplemented by sanitary inspection. Railroads have complied with the standards of the insurance company regarding toilet and washing facilities, the distribution of drinking water, the installation of a standard first aid kit and elementary instruction in resuscitation. It is a remarkable fact that at certain points on uninspected lines (uninspected when related to high standards of inspection) where there is the greatest danger of shock from electricity and where the cases are actually numerous, there is no provision made for resuscitation either through the personal efforts of some instructed co-worker or by the application of remedies and devices usually required in a first aid kit.

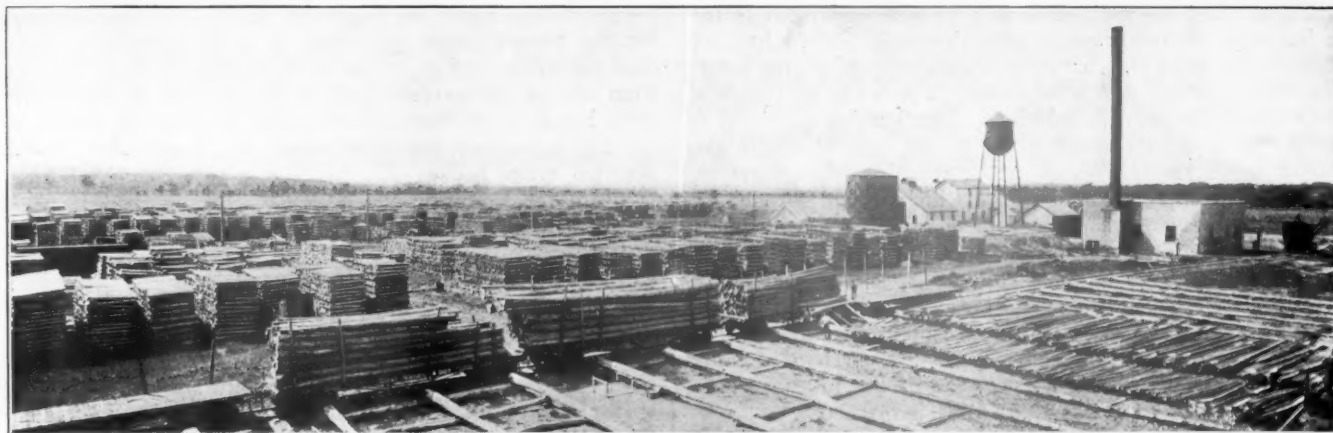
At the time of the award to the Pennsylvania Railroad of the Travelers insurance medal as the American employer who during the current year did the most for the protection of the lives and limbs of its workmen by the chairman of the jury of award of the American Museum of Safety, W. W. Atterbury of the Pennsylvania Railroad said:

"In accepting the Travelers medal for industrial safety, the Pennsylvania Railroad desires to express its earnest appreciation of the honor. Its great value is the incentive to our officers and employees to still further achievement. Industrial safety is an important branch in the broad humanitarian scheme that has characterized the policy of the Pennsylvania Railroad for many years in the conservation of human life and energy.

The Status of Group Insurance

No one has obliged any of the group insured railroads to extend to employees the opportunity of access to adequate life, accident and sickness insurance. There is no law requiring such a measure; there is but little precedent. The basis of this course of action is a desire to see simple justice done. Economic security is one of the principal needs of labor today. It ranks with those other questions which determine the temper of industry and cause the violence of its pulsations—wages, hours, industrial status and a fair share in profits.

Economic security is a condition of relief from the fear of an unprovided-for old age, unemployment, sudden unprovided-for death, illness or accident. To remove fear is to remove the first cause of human restlessness and discontent.



A Partial View of the Tie Treating Section of the Yard

A New Timber Treating Plant at Minneapolis

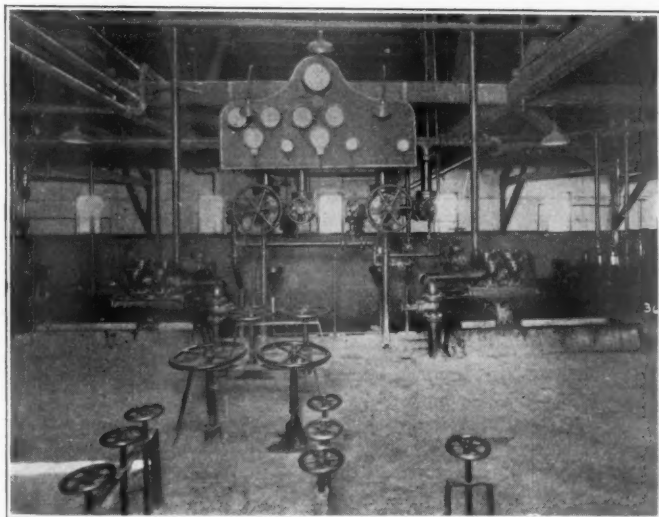
Advantageous Location and Substantial Construction Characterize
Project Completed Near That City

IN THE ERECTION of a new timber treating plant at Gilkey, near Minneapolis, Minn., lies one of the interesting timber treating developments of the past year. This plant is owned by the Walsh Tie Company of Minneapolis and is located $7\frac{1}{2}$ miles from that city. Here have been established

standard gage tracks connected at both ends with a track tributary to the Minnesota transfer yard. As a glance at the map will show, these tracks are parallel, the first six being spaced 112 ft. apart, the two serving the pole plant 66 ft. apart and the remaining 100 ft. and 120 ft. apart. These tracks are inter-connected at logical points to provide standard gage connections between the several plants, and in the tie treating section of the yard are supplemented by a system of five narrow gage tracks parallel to and between the standard gage tracks and connected at one end in such a way as to permit of their operation independently of the standard gage system.

The Tie Treating Plant

All of the buildings and structures entering into the project are situated in this yard with the exception of the living

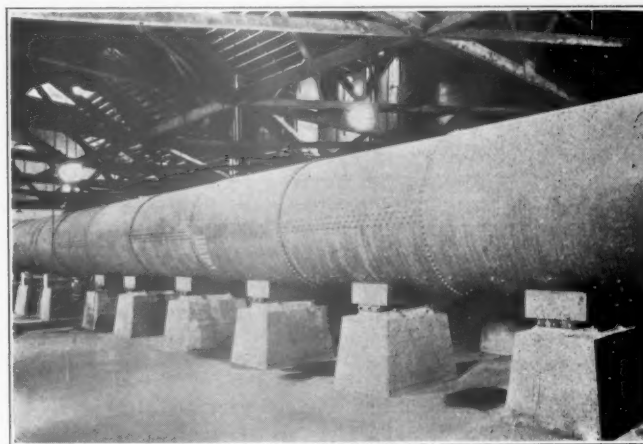


How the Operating Valves Are Arranged in the Retort House

facilities for the pressure treating of a million or more ties annually, with extensive facilities for treating telegraph and telephone poles, and a plant for sawing, splitting and trimming fence posts. The buildings are of unusually substantial construction, and are arranged and equipped in a way that shows close attention to detail. The project includes a sanitary sewage disposal system, comfortable housing facilities for employees, and aside from providing ample arrangements for future expansion, is so situated that the facilities are readily accessible to all railroads entering the "Twin Cities."

General Layout

At present the project occupies about 100 acres of a 284-acre tract owned by the company and available for timber treating use, and consists in general of a yard of 11



The Retorts Are Carried on Roller Bearings

quarters for the employees, which are just outside at the end nearest the tie and pole plants. All of the plants are connected by underground electric conduits extending from a transformer station near the tie plant, and the pole and tie plants are also connected with steam lines from a central power station.

The tie treating plant is located at the west end of the

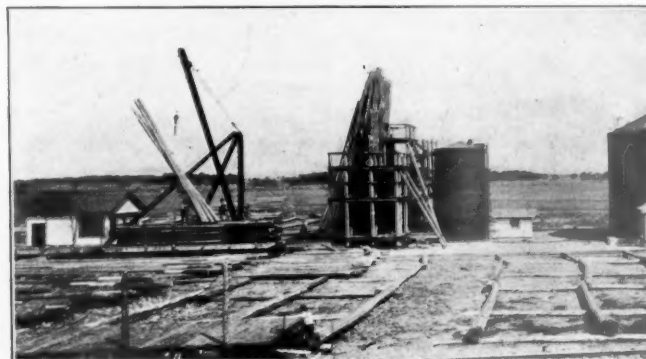
yard and along the north side of that section devoted to the tie industry. It comprises a retort house, a 500-ft. loading platform for tram cars, a two-stall narrow gage engine house and machine shop, and a laboratory, storehouse and storage tanks for the preserving solutions. The loading platform is directly ahead of the retort house on the line of one of the narrow gage tracks, which upon reaching the platform, branches into three parallel tracks which extend throughout the length of the platform and thence directly to the retort house. The loading platform is elevated to the height of a flat car and is served on each side by a spur track extending from the nearest standard gage track; and the three narrow gage tracks, as they leave the platform in the direction of the retort house, accommodate a cross-over system whereby tram cars that are loaded on one side of the platform may be switched to the opposite side of the retort house.

The retort house is a frame structure with concrete foundation and floor, the roof of which is supported on trusses substantially cross-braced and carried on the sidewalls. The roof itself is shingled and the walls are finished in stucco. In this house are two retorts, each 6 ft. in diameter and 123 ft. long, with additional space for a third retort when needed. The retorts are supported on roller bearing iron saddles, each carried on one of 15 concrete piers. The anchors for holding the retorts are placed at the middle to provide for ample expansion and contraction in the cylinders.

There are two working tanks in the building, each 14 ft. in diameter and 21 ft. high, and two storage tanks situated just outside of the building to one side of the retort house tracks, one 20 ft. in diameter and 20 ft. high, the other 40 ft. in diameter and 40 ft. high. All of the pipes and valves connecting the retorts with these working and storage tanks

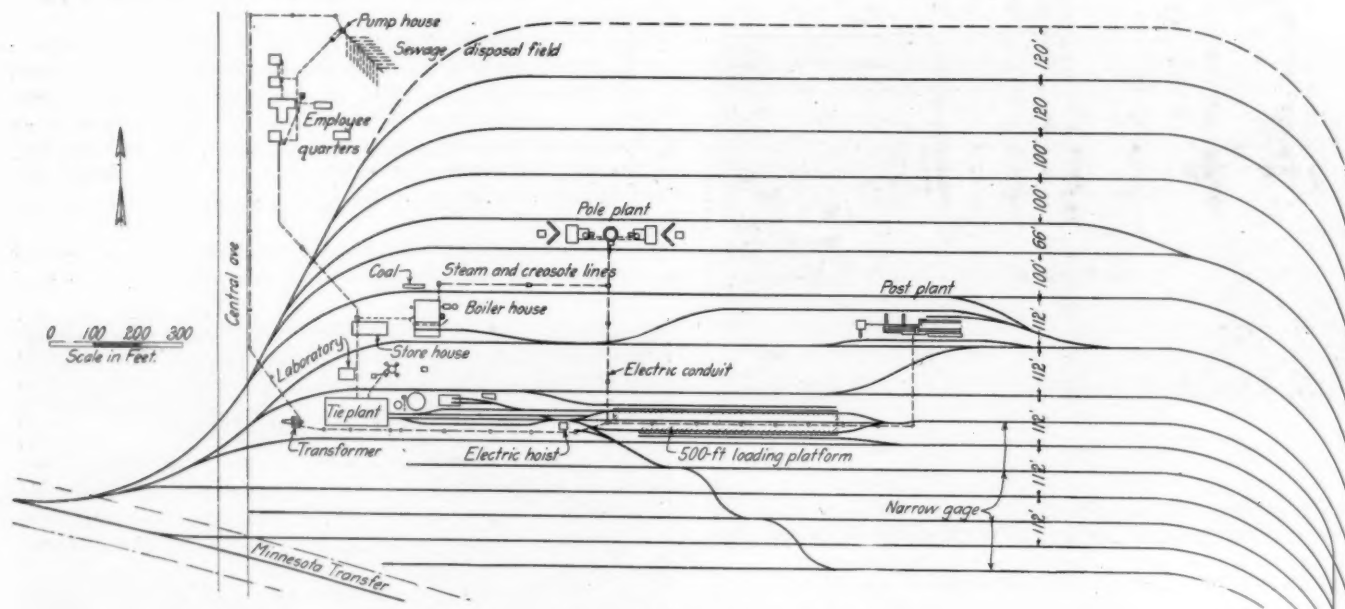
the retorts and about the tie storage yards. The machine shop for the narrow gage equipment is located within a short distance of the retort house and is reached by a turn-out from one of the narrow gage tracks leading to the retorts. This house is of frame construction finished in stucco, as are the laboratory and storehouse, which are also located near the retort house.

Steam for operating the pumps in the tie treating plant



A Side View of Half the Pole Treating Plant

and for heating the solutions at both the tie and pole plants, as well as for heating the buildings, is obtained from a nearby power house, while the water supply for the power house and for other purposes, especially for fire protection, is obtained from a 50,000 gal. elevated steel tank adjacent to the retort house. The power plant is a brick structure



The Ground Plan of the Timber Treating Plant

are carried in an open basement in the retort house and in concrete connecting conduits, the handles on all valves required in operating the retorts being extended above the floor. Two pressure pumps, two air compressors, one vacuum pump, two oil pumps, one fire pump, and one zinc chloride pump, all situated in the operating room of the retort house within easy reach of the operator, constitute the mechanical equipment for performing the tie treating operations; and one 21-ton steam locomotive and 150 tram cars, together with a stationary electric hoisting engine, itself situated at the narrow gage track cross-over between the loading platforms and the retort house, provide the equipment for hauling and otherwise handling the ties or other timbers in and out of

48 ft. wide, 54 ft. long and 42 ft. high in which are four 150 hp. boilers, which furnish ample capacity for all requirements at the tie and pole plants and at the employees' quarters. This plant is served by a spur from one of the standard gage tracks, this spur terminating in an elevated timber trestle in the rear of the building for the purpose of dumping the coal cars.

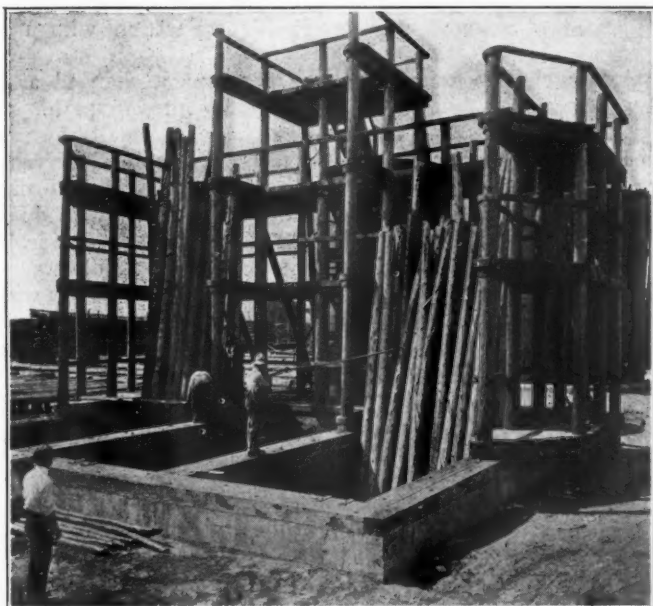
The source of the water supply from which the steel tank is filled is a well 453 ft. deep, situated some distance from the yard. From this well the water is pumped by an air lift system having a capacity of 750 gal. per minute, this equipment together with the fire pump in the retort house providing fire protection for all of the property within 200

ft. of the retort house as well as protection for the employee buildings.

The Pole Plant

The pole treating plant is situated between two standard gage tracks and is constructed in two units, having a common storage tank. Each unit consists of a 30,000 gal. working solution tank, 14 ft. in diameter and 20 ft. high; three depressed immersing pits equipped with heating coils on the bottoms and sides and, above the ground, with timber racks for supporting the poles in an upright position while the butts are being treated. It also includes an electrically-operated crane for loading and otherwise handling the poles. The storage tank, common to both units is 27 ft. in diameter and 30 ft. high with a capacity for 130,000 gal. of creosote oil. The three pits are each 10 ft. by 22 ft. in cross section and 11 ft. deep each with capacities for one carload of poles. The entire plant is thus capable of handling six carloads of poles at one time.

Each unit has its own operating equipment which is located in a concrete room under the pit and consists of two 250 r.p.m. centrifugal pumps operated by a 240-hp. motor, together with the necessary valves for controlling the flow



A Close-Up View of One of the Pole Treating Units

of the creosote. These pumps are large enough and the valves and piping arrangement are sufficiently flexible to enable a constant circulation of oil to be maintained in any one or all of the pits and to permit changing the oil from hot to cold within three minutes. For the purpose of handling the poles there is in addition to the electric hoists (the machinery for which is housed in a frame structure finished in stucco) a locomotive crane; and the plant is further equipped with a puncturing machine for making whatever holes are desired in the poles. Connected with this machine is a 500 ft. roll-way laid in such a manner that poles unloaded from cars at the puncturing machine may be transferred directly to the treating tanks.

The Post Plant

As shown on the map, the post plant is located at some distance from the tie and pole plants, whereby post manufacturing operations may be carried on independently of all other work in the yard. This unit, similarly to the pole plant, is located between two standard gage tracks, which in this case are only 66 ft. apart. It is constructed to handle

all sizes of fence posts and is operated entirely by electricity, three motors being installed for this purpose. The posts are loaded from the cars directly into a conveyor which carries them to the saws where the ends are trimmed. After trimming, the posts are inspected and separated into different sizes, then dropped into baskets which are handled by a locomotive crane and unloaded in the yard for storage or loaded into tram cars for treatment, a cross-over to the track in the vicinity of the treating plant having been provided for this purpose.

While not connected directly with the tie treating, one of the interesting features of the project lies in the facilities which have been provided for the employees. As stated elsewhere, a colony of houses has been established just outside of the yard at one end for this purpose. This colony consists of three stucco finished cottages, a combined kitchen and mess hall and a combined lavatory and bath house. The mess hall has a capacity for 125 persons and is provided with a combined refrigerator and ice storage house. The buildings are comfortably arranged, are equipped with steam heat and electric lights and hot and cold water, and are served by a sanitary system of sewage disposal, the latter terminating in a septic tank and tile drains distributed through a disposal field.

As mentioned at the outset, the project provides facilities for treating a million or more ties annually and may readily be expanded as the demand for its use increases. It is owned by the Walsh Tie Company.

Less Politics in Canadian Railways

"THERE ARE 100 BODIES for the regulation of the railroads on the North American continent. Only one of these is in Canada, the other 99 are in the United States." This fact was ascribed by D. B. Hanna, president of the Canadian National Railways as responsible for the success of government ownership under the plan effected by the Canadian government, in an address at a dinner given in his honor by the Mid-Day Luncheon Club at Springfield, Ill. on April 28. Mr. Hanna was followed on the program by Francisco P. de Hoyos, general agent of the National Railways of Mexico, New York City. The speakers were introduced by William H. Finley, president of the Chicago & North Western, who served as toastmaster.

An abstract of Mr. Hanna's address follows:

Address by President Hanna

There are six essential points of difference between the conditions under which government ownership is conducted in Canada and those under which government operation was tried in the United States during the period of federal control. These are as follows:

(1) In the United States the government took possession of the roads over night as a war measure. In Canada the government acquired the railways by construction and purchase, step by step for economic reasons. (2) In the United States the object was unified service, regardless of cost. In Canada the government's object was to insure adequate and efficient railway service. (3) In the United States, federal control was recognized as a temporary condition. In Canada the plan of a national railway system was designed to be permanent. (4) In the United States the method of management adopted was political with a cabinet minister in charge, whereas in Canada, on the creation of the National Railways, a corporate form of administration was established and the appointment of a new board for the Canadian National Railways on its acquisition by the dominion government in the fall of 1918 was made the occasion of taking away from ministerial or political control, those lines formerly administered by the Department of Railways and Canals.

These lines were also placed under the new board, composed of outstanding business men and railway officers. Thus the entire system owned at that time by the dominion government was placed under an organization of a corporate character. Subsequently the management of the Grand Trunk Pacific, of which the minister of railways and canals was appointed receiver, was also placed in the hands of what is known for convenience as the Canadian National Railways' Board.

The fifth difference is that under the United States plan competition was eliminated and a great monopoly was established. In Canada competition was preserved. The effect on the employees is a sixth point of difference, although actually the result of the first five. In the United States the indifference that generally accompanies monopolistic operation was definitely felt. Competition is the spur to endeavor and the result has been that our own employees have been "on their toes"—keen to advance the interests of the system for which they work—enjoying the contest for the nation's business.

There are many in Canada who were opposed to public ownership of railways; in fact, public ownership has not been adopted as a plank in the platform of any one of the large political parties. The form of public ownership adopted in Canada was one which followed logically the policy of assisting the construction of railways which successive governments had adopted. (Mr. Hanna then roughly sketched the history of the main sections of the national system).

This national system serves the nine provinces of Canada—and competes with the Canadian Pacific for the trans-continental and other business of the nation. In a few months the Grand Trunk is to be taken into this system and will add 4,776 miles and give the national system a total mileage of 22,375 miles.

I am not discouraged by the record of the nationally owned lines in the last three years. While the losses in operation had been large 1921's performance was 20¾ million dollars better than in the previous year, and during four months of 1921 there was an actual net return. Traffic was below normal and it was well known that a disproportion between expenses and earnings has existed since 1918 (and even before) and had most adversely affected the operation of the roads in the United States in 1919, 1920 and 1921. In 1921 the C. N. R. stood alone as a transcontinental line that had an increase in gross earnings. The increase was just over one million dollars; and during the same period the privately owned competitor experienced a shrinkage of 23½ million dollars in its gross revenues. While traffic density was light on the Canadian National, the train load was relatively good and steadily improved. Also a fine passenger service was maintained.

During the period of high prices and low rates the Canadian National had had to make large expenditures to take up deferred maintenance and was under the necessity of spending large sums of money for improvements and betterments and new equipment. The principal trains are now made up of modern steel cars.

Two consolidations of staff have been effected with an entire absence of friction, and four groups of lines, all more or less designed as competitors, have been made into a smooth working though complex transportation machine. A preponderance of main line mileage has increased the difficulties of the management. Much of the mileage was new—the main lines were completed in the second year of the war; in fact over 35 per cent of the national system's mileage has been taken over for operation since the outbreak of the war. Canada with a population of 8¾ millions added to its railway systems in the 10 years ending with 1921 a total of 14,650 miles of railway, whereas the United States with a population of 108 million added in the same period but 10,-

280 miles. In population Canada had only 2.3 persons per square mile of area. The United States had 40. To support each mile of railway Canada had 233 persons to the United States' 430. However, there is promised a growth of Canadian population such that Canada will soon provide enough business to support its entire railway mileage. Canada has all the basic materials in great quantities that have contributed to the great development of the United States; forests, fisheries and mines, as well as agricultural lands, and particularly the greatest hard wheat producing areas in the world.

Much has been said of politics interfering with efficient operation of government owned lines. That is ancient history. Under the present form of corporate administration I stand here and tell you that in the last three years there has been no political interference. During this period we passed through an election and quite an intense affair it was, and yet at no stage nor at any point on the system can anyone state that anything was done by the management to serve political ends. The directors have taken a firm stand that no one employed by the railways should take a greater interest in politics than to exercise his franchise. It was laid down as a rule that anyone who identified himself with a political party to the extent of accepting a nomination as a candidate automatically severs his connection with the system.

At the election referred to, the government changed and it is announced that it will continue the present plan. If this is done I can see no reason why the nationally owned lines in Canada should not prove to be self-supporting eventually under normally adjusted expenses and earnings. From the shippers and consignees' point of view the plan of dual competitive service to every important community is ideal. There is no competition in service and in principle of ownership—the one system is nationally owned while the other was at its inception nationally endowed—the two systems compete for the nation's business. Both systems are strong and in good physical condition; both have a capacity considerably beyond normal traffic movement—at present business is sub-normal.

Canada can therefore face a period of expansion with confidence that her railways are in a position to assist in the development work. In the past the railways have played a great part in the national progress and in the period immediately ahead I am confident that the Canadian National will be a big factor in the upbuilding of the country and will ultimately be recognized as one of Canada's greatest assets.



Photo by Underwood & Underwood

A Part of the American Army of Occupation Entraining to Leave Germany

A Reply to Some of Frank J. Warne's Charges

Facts Were Neither Fairly Presented Nor Logically Interpreted

—Conclusions Therefore Not Valid

WASHINGTON, D. C.

C. S. DUNCAN, an economist who was statistician for the United States Shipping Board at the Paris Peace Conference, testified before the Senate Interstate Commerce Committee, on April 29, as a witness for the railroad executives that accusations made by Frank J. Warne, representing the train service employees, against the railroads, were not only unfounded but that Mr. Warne repeatedly misstated facts and drew illogical conclusions from his own arguments. Mr. Duncan quoted extensively from the decisions of the Interstate Commerce Commission and other official reports to show the falsity of certain of Mr. Warne's statements.

"The railway executives," said Mr. Duncan, "in asking that a reply be made to Mr. Warne's testimony, have naturally felt that the charges and accusations there made are not true, that the facts are neither fairly presented nor logically interpreted and that the conclusions are therefore not valid. Let me say at the outset that I agree in general with that statement, and because I agree I feel fully justified in coming before this committee as a disinterested witness. I have confidence that I can demonstrate to you that Mr. Warne is wrong in all of his major conclusions."

Taking up the policy of the Railroad Administration during federal control, Mr. Duncan said the witness misstated the facts when he said that "the governmental policy as to revenues was not based upon economic principles of having earnings exceed or even meet expenses and that general taxation out of the United States treasury was depended upon to meet any resulting deficits."

"That it was the policy," said Mr. Duncan, "of the Railroad Administration under Director General McAdoo and Director General Hines until far on into 1919, to make revenues pay expenses and rentals, and that Director General Hines relinquished the policy with reluctance and as a matter of expediency when it became clear that the roads were going back to private control, is proven by their own statement. The Railroad Administration attempted to operate the roads on the same economic principles as private management must do. It endeavored to make income equal outgo with 'a margin of safety.' It failed because its judgment was in error as to costs, the largest element of which was wages."

Mr. Duncan called attention to "the apparent desire of the witness" in an exhibit filed with the committee "to have the observer draw the conclusion that the railroads made one final grab into the treasury bag just before the so-called government guarantee period ended with the month of August, 1920."

"The striking increase in operating expenses in 1920 does not represent an orgy of expenditures at government expense, but an avalanche of wages at the railroads' expense," said Mr. Duncan. He added that two facts of outstanding importance have received no mention in the exhibit; namely, the increase in wages made on July 20, 1920; and retroactive to May 1 and the increase in rates effective August 26, 1920, but not retroactive. "These things the witness knew perfectly well when he constructed the exhibit and when he presented it for record." Continuing, Mr. Duncan said:

"The increase in rates failed to secure sufficient operating revenues to pay operating expenses and the rental agreed upon in the standard contract or the return provided for as to the roads not signing the contract. This deficit of \$711,947,242 had to be paid out of the federal treasury."

"This deficit does not include the tremendous sum necessary to liquidate the claims of the roads under the upkeep

section of the federal control act or the amount required for an adjustment with the so-called short lines, or the amount involved in the claims of 'third persons' against the Railroad Administration. These sums have been estimated by Director General Davis at \$1,100,000,000.

"The amount due the roads under the guarantee for six months, March to August, inclusive, 1920, now stands at \$653,539,001. The total appropriation made by Congress to the Railroad Administration to date has been \$1,750,000,000. The return on railroad property investment account under federal operation, disregarding the rental and guarantee was for 1918, 3.76 per cent; for 1919, 2.75 per cent and for 1920, 0.32 per cent. The percentages of return on property investment actually realized from rental and guarantee was for 1918, 5.05 per cent; for 1919, 5.05 per cent, and for 1920, 4.29 per cent. The return to the roads has been strictly limited for the period of unprecedented prosperity for industry generally, thus preventing the accumulation of reserves to meet the period of depression."

Replying to statements made by Mr. Warne challenging the accuracy of sworn information furnished the Interstate Commerce Commission by the railroads, Mr. Duncan quoted from the commission's decision in the 15 per cent rate case, as well as from other utterances of that body in which the commission said that it had checked the statistical reports of the carriers and that there was no question about their accuracy. Despite this record, Mr. Duncan said "the witness maintains his charge of duplicity and deception as a deliberate policy of the railroads."

Referring to "the charge of inordinate expenditures for maintenance, at least on certain roads by regional directors during federal control" made by Mr. Warne before the Senate committee, Mr. Duncan read for the purpose of disapproving the accusation, statements made at various times by the Interstate Commerce Commission relative to maintenance. "The commission certainly had all the data available for anyone to use," said Mr. Duncan. "It had heard both sides without partisan interest. It had been made fully acquainted with the bad as well as the good in railway managements, the inefficiency as well as the efficiency. By a most searching investigation the Interstate Commerce Commission found no such excessive expenditures prior to federal control. There is nothing in the reports of the directors general for the period of federal control that indicates anything in their opinion but an inadequacy of transportation facilities when the roads were taken over."

"From all of these sources, certainly not biased in favor of the carriers, an analysis of the same data presented by Mr. Warne leads to the conclusion: The roads were not overmaintained, but rather undermaintained to meet the transportation needs of the country, prior to federal control, at the time of federal control, during federal control and when the roads were returned to private control. The charge, therefore, of expenditures running riot, of excess expenditures, of over maintenance will not hold against this evidence."

In reply to the accusations that the railroads during the first six months after their return to private control on March 1, 1920, had padded their operating expenses, particularly the maintenance accounts and attempted to secure money from the federal treasury for the purpose of building up their properties, Mr. Duncan charged that Mr. Warne "by deceptive charts and misleading, insinuating statements has sought to impute dishonesty to railroad managers."

While there was an increase in maintenance expenditures during that six months period, Mr. Duncan said that it was due to the condition in which the properties were returned at the end of federal control, and the fact that costs were abnormal. Mr. Duncan added that the Transportation Act of 1920 contains a specific provision to protect the federal treasury for the six months guaranty period and continued:

"The Interstate Commerce Commission is directed under that act to determine and has been busied at a determination of, the expenditures that in its opinion properly belong in operating expenses. The carriers were fully cognizant of this provision at the time expenses were being made. If there had been a temptation on their part to inflate expenditures unduly, the specific provision in this act would have restrained them. The carriers knew that all of their expenditures on maintenance would be fully and carefully reviewed. They have presented to this committee precisely the same data that they gave to the commission for review.

"It seems clear that the witness has again fallen into error by comparing varying money costs when he should have compared physical and service units. He can find no corroborative evidence for his charge either from the Railroad Administration or the Interstate Commerce Commission. The latter calls attention in its annual report for 1920 to a shortage in equipment; in its own words to an 'impaired transportation machine' with which to meet the abnormally heavy traffic requirements.

"When the roads came back," continued Mr. Duncan, "they were not being run on an economic basis. Expenditures were greater than receipts and expenditures had been much restricted by orders from Washington. For January and February, 1920, the net income ran below the standard return by \$153,000,000. Private management had set before it the stupendous task of restoring the economic equilibrium. The Railroad Administration and the government virtually said: 'Here, take this impaired machine; apply it effectively to the greatest volume of traffic on record; 75 per cent of your freight cars are on foreign roads; find them, repair them, but don't delay traffic; your employees are discontented but we have imposed upon you expensive rules and regulations and we expect to add over 618 million dollars annually to your payroll to satisfy them; there is no program for the year, make one; repair your locomotives and your roads; haul the biggest movement of grain known in history with box cars, 50 per cent of which are not fit for such service; get your cars on your own roads, send empties to areas needing them; haul coal and haul coal longer distances where industry needs it to forestall any possible shortage; you will pay more for your own coal and it will not be of as good quality; your fuel bill will be increased above ours in 1919, which was 396 million dollars, to more than 566 million dollars, an increase of 170 million dollars or 43 per cent on this one item; traffic will overload the impaired machine until you will be driven beyond the point of diminishing returns; sometime along we'll set a value on your property and attempt to increase your revenues to secure a fair return on it—but meanwhile your treasuries are empty because the government took away your ready cash at the same time with the control of the roads and has not returned it; you have not been permitted to share along with other industries the prosperity of the war period; you have no reserves with which to meet a business depression; you must face a public who will resent heavier freight and passenger rates; you will be compelled to ask higher rates and fares when the universal demand for the public is for lower rates and fares; we'll police your accounts and judge your expenditures by the test period. Go and justify yourselves."

"All of the economic distress of the world cannot be laid at the door of the railroads," said Mr. Duncan. "Mr. Warne claims that purchases of supplies and materials, especially in the six months' guaranty period, March-August,

1920,—created an artificial prosperity and the stoppage of such purchases brought on the business depression. But this does not surely account for the fact that a break in the rubber market came as early as February, 1920, followed quickly by distress throughout the automobile business. It does not account for the break in the silk market in May, 1920, followed within a few weeks by cotton and wool. It does not account for the indefinite 'vacation' given its employees by the American Woolen Company beginning July 1, 1920, when its mills were closed. It does not account for the break in the sugar market in July, 1920. It does not account for the rapidly rising tide of cancellations throughout the last four months of this guarantee period. It does not account for the slump in farm prices nor the break in wholesale and retail prices in 1920.

"The break in prices, the demoralization of markets, the beginning of liquidations, the advent of unemployment, the onset of business depression all took place either prior to or during this guarantee period. Purchases by the railroads of supplies and materials, not only did not cause artificial prosperity but also failed to prevent or even postpone deflation. The railroads were not, as asserted by Mr. Warne, the cause of inflation and the cause of depression, but, much more than other industries, because of government regulation and the consequent slow processes of adjustment, they were caught in the 'fell clutch of circumstances.'"

Mr. Duncan told the committee that the compensation paid general and division officers represents only 2½ per cent of the total wage bill of the railroads. The increase in compensation paid general officers from 1916 to 1920 inclusive was 42.1 per cent, Mr. Duncan said, while to division officers it was 125.3 per cent, of which, however, 60 per cent represented increases granted the lowest paid officials. Contrasted to this, however, the increase in the total wage bill paid all employees in 1920 over 1916 was 151.8 per cent. Eliminating the pay of general and division officers shows, however, according to the witness, that railroad employees, excluding general and division officers received an increase in pay of 154.9 per cent.

Statistics issued by the Interstate Commerce Commission show that the average annual compensation paid employees in 1920, including general and division officers, was \$1,820. Excluding these officers, Mr. Duncan said, the average annual compensation for employees was \$1,794 or a difference of \$26.

Mr. Duncan denied statements made originally before the Senate committee by Mr. Warne and subsequently reiterated by Samuel Gompers, president of the American Federation of Labor in a speech before the National Agricultural Conference in Washington, to the effect "that over \$1,250,000,000 has been placed to the cost in wages of the railroads and placed by them to the railroad workers more than is properly or ought to properly be charged."

"There is no overstatement of total compensation and he knew it," said Mr. Duncan, in referring to Mr. Warne's testimony. "As a matter of fact he has made no claims that the items were not actually correct or that the sums were not actually paid to the classes specified and in the years under review. For this witness to have stated his conclusions in such equivocal terms as to be generally misunderstood is reprehensible. The vast wage bill of \$3,698,216,351 was actually paid to railroad employees in 1920."

A witness for the National Association of Owners of Railroad Securities was to follow Mr. Duncan on Thursday. It is understood that Chairman Cummins hopes to be able to get out a report as a result of this investigation, which has been continuing for about a year, within about three weeks. It is hoped also to have a report within that time on the Capper and other bills to amend the transportation act. It is expected that the report of the committee will be unfavorable.

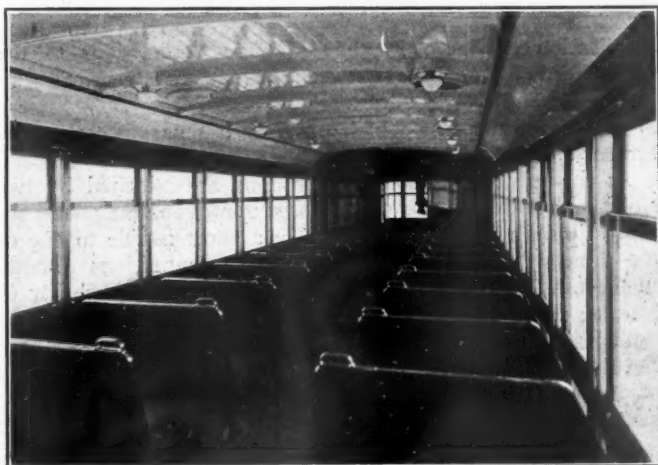


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New Features in Service Railway Motor Coach

Unique Type of Truck with Cushioned Wheels—High Seating Capacity Combined with Light Weight

A MOTOR COACH especially designed to meet the requirements of railway service has been built by the Service Motor Truck Company, Wabash, Indiana, and is now being operated on demonstration trips over the lines of the Big Four between Wabash, Indiana, and Benton Harbor, Michigan. The power plant and details of the transmission follow regular motor truck practice, but the design of the running gear as well as of the car body is a complete departure from the motor bus type of construction.



Interior of the Passenger Compartment

A seating capacity of 38 passengers is provided in the body of the car and there are seats for 8 additional passengers in the baggage compartment, which may be folded up against the sides of the car.

Although the total weight of the car does not exceed 13 tons the body is of rugged construction built up on an underframe of four 6-in., 8-lb. channels and it is carried on two four-wheel trucks with power transmitted to both axles of the forward truck. The body is 42 ft. 5 in. long over the bumpers and 8 ft. 6 in. wide over the posts. The frame is of steel construction throughout and is finished on the outside with steel sheeting. The engine hood, with the ex-

ception of the radiator is included in the baggage compartment, which is 8 ft. long back of the hood, and is served by a sliding door on either side. The passenger compartment is entered through a vestibule at the rear end of the car which is fitted with trap and side doors in accordance with steam railroad practice. Each window has two sashes, the lower one of which can be raised, and is fitted with a Pantosote curtain. Suction ventilators are also provided in the roof. A saloon with a dry hopper and an alcove water cooler is located in the forward left hand corner of the passenger compartment. The car is heated by exhaust gases from the engine carried back through the passenger compartment in thin wall steel tubes, one on either side. The body was built by the J. G. Brill Co., Philadelphia, Pa.

The power plant is a four cylinder, four cycle, valve in head motor with 4½-in. by 6-in. cylinders. This motor has a safe constant operating speed of 1,500 rev. per min. at which it has a rating of 61 hp.; its maximum speed is 1,800 rev. per min. at which it has a power rating of 66 hp. The clutch and transmission are mounted in a unit with the engine and provide three speeds with gear ratios of 4.09 to 1, 1.76 to 1, and 1 to 1. The power plant is mounted between the channel sills at the front of the car and is removable as a unit. The fuel tank has a capacity of 50 gals.

Power is transmitted from the main transmission through an auxiliary transmission mounted in the cast steel swinging bolster of the forward truck, by means of a motor truck type propeller shaft having two universal joints. The auxiliary transmission provides two gear ratios for forward operation, one for 30 miles an hour maximum speed and the other for 40 miles an hour maximum speed. One ratio is provided in reverse, designed to give a maximum speed of 30 miles an hour. This makes a total of six speeds forward and three in reverse. From each end of the auxiliary transmission a motor truck propeller shaft provided with two universal joints transmits the power through a pinion and bevel gear drive to one of the axles of the forward truck.

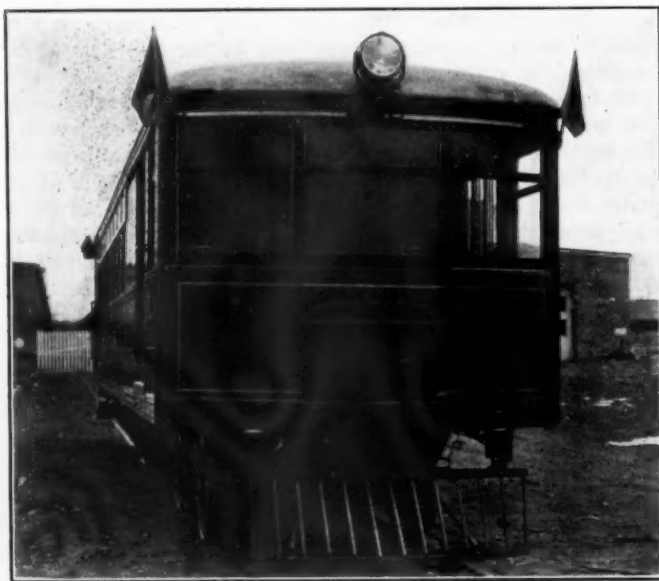
The most unique feature of this car is the type of truck construction used. The trucks are of the four-wheel type, the axles having inside bearings of the Timken roller type.

The truck frames are built up of 6-in. I-beam side rails on which are placed the channel cross members that carry the swing motion bolster. The ends of the side rails are also joined by cross channels with gusset plate connections. The axles are of alloy steel, heat treated and are 3 in. in diameter. The ends are tapered to receive the wheels which are also secured by keys. The axle bearing housings carry the semi-elliptic springs the ends of which are shackled to and support the truck frames.

The wheels on both the driving and trailing truck are of unique construction. The centers are of cast steel with tires of rolled steel 30 in. in diameter over the treads. Between the center and the tire is placed a rubber cushioning element consisting of two rings of rectangular section one on either side of a metal web cast integral with and projecting outward from the middle of the wheel center face. The lateral thrust between the wheel center and the tire is taken by inwardly projecting flanges attached to both sides of the tire, which overlap the wheel center.

Each truck is provided with four brake shoes operated by a link arrangement similar in principle to that formerly employed on the driver brakes of American type locomotives. These brakes are operated by a hand wheel through an irreversible worm and gear, with a pawl for locking the wheel when the car is unoccupied. An independent emergency brake, operating on the propeller shaft drum is also provided. Although not included as regular equipment on the car, Westinghouse traction brake equipment can be installed.

The motorman's seat is located at the left of the engine hood. The controls consist of a foot operated clutch, a hand



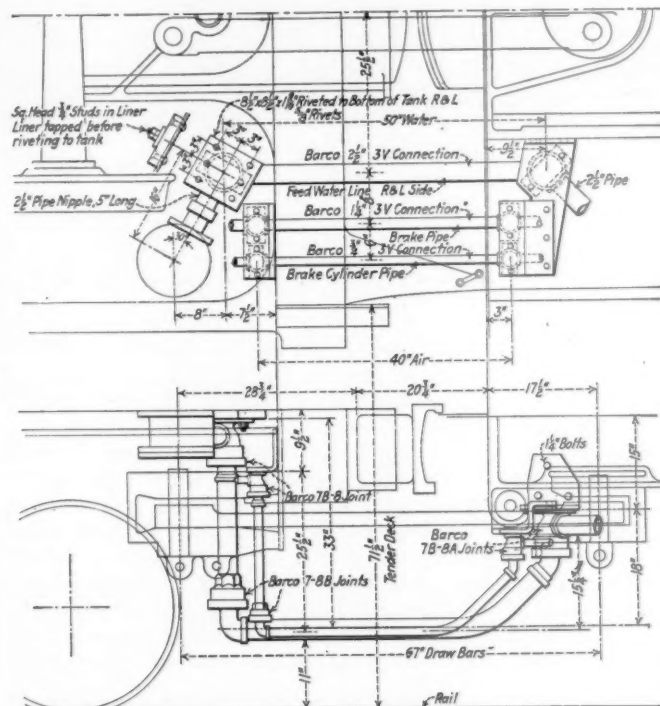
The Front End of the Service Coach

operated gear shift, hand operated spark and throttle controls with a foot operated auxiliary throttle, and the hand brake wheel, or brake valve if the car is equipped with air brakes.

On a recent run from Wabash to Elkhart, Indiana, a distance of 68.6 miles the trip was made with an average speed of 28.6 miles an hour and a maximum speed of 45 miles an hour, the total time of the run being 2 hours and 24 minutes. The average fuel consumption was at the rate of 5.3 miles per gallon of gasoline, while the total oil consumption was less than one quart for the round trip of 137 miles. From a standing start the car accelerated to 25 miles an hour in 30 seconds, 29 miles an hour in 1 minute, 35 miles an hour in 2 minutes and 41 miles an hour in 2 minutes and 40 seconds.

Flexible Pipe Feed Water Connections Between Engine and Tender

THE FIRST APPLICATIONS of flexible metallic connections to the feed water line between the engine and tender were applied in a single large pipe line on the center line of the locomotive, through which both injectors were fed. This type of connection met with some objection because of the possibility that a failure of this connection would entirely cut off the feed water supply and cause a complete engine failure. The drawing shows an application of Barco joints



Application of Barco Flexible Metallic Connections to the Feed Water Line Between Engine and Tender

to the feed water line which provides a separate connection for each injector.

At the tender end these connections are attached by two studs each to plates riveted to the bottom of the tank, and the upper joints are each connected by a short nipple to one of the tank wells. By thus applying the connections directly to the tank instead of to the tender frame the possibility of leakage developing as the result of any slight shifting of the tank is eliminated, and the connections are raised well above the rail. Similarly, the terminal joint on the locomotive end of the connection is secured to the deck, with a pipe connection leading from the joint to the strainer box at lower end of the injector feed water pipe.

As is indicated in the drawing, the feed water connection is carried well in toward the center of the locomotive.

Connections of this type, with feed lines 2 in. in diameter, have been in service on six Consolidation type locomotives on the Bangor & Aroostook for several months during the past winter during which time the locomotives have averaged about 30,000 miles with no maintenance required to the feed water line. The severe climatic conditions prevailing during the winter months on this line require almost constant use of the heaters when the injectors are not working, and it is estimated that the same service would have required at least one and probably two renewals of the ordinary hose connections. In addition to the reduction in the cost of maintenance the pipe connections also insure against injector failures through the collapse of loose hose linings.

Frisco Improves Financial and Physical Condition

Interest on Income Bonds Earned with Wide Margin.
Operating Ratio of Only 74.61

A YEAR AGO the question as to the St. Louis-San Francisco was as to whether the property operating on its own resources would be able, under the adverse conditions of 1921, to earn the interest charges on its cumulative adjustment mortgage bonds and its income bonds. The opinion at the time was optimistic. That this optimism was justified is now indicated in the Frisco's annual report, which shows sufficient net earnings to provide for payments of the interest on both issues of bonds and a balance after this interest of \$3,225,680. In 1920 the standard return and guaranty enabled the road to pay its interest in that year and to leave a balance of \$1,743,231. These figures, because of the inclusion of standard return and guaranty, do not indicate the degree of improvement which actually took place in the fortunes of the Frisco during the past year. The following analysis will give a better idea of the situation:

	1921	1920 Including std. return and guaranty	1920 Eliminating std. return and guaranty
Income available for interest.....	\$17,394,829	\$15,826,405	\$2,863,086
Interest on fixed charge obligations..	9,665,879	9,630,761	.....
Balance	\$7,728,950	\$6,195,644	.....
Interest on adjustment mortgage bonds	2,391,750	2,340,893	.....
Balance	\$5,337,200	\$3,854,751	.....
Interest on income mortgage bonds..	2,111,520	2,111,520	.....
Balance	\$3,225,680	\$1,743,231	.....

These figures show that it was standard return and guaranty which enabled the Frisco to earn the interest charges on its income bonds in 1920. In 1921, because of the manner in which the Frisco improved its operating results, it earned sufficient net to rival its 1920 corporate result. The measure of improvement which took place is best shown in the income available for interest, \$2,863,086 in the third column, as compared with the figure in the first column of \$17,394,829, an increase of 507.6 per cent.

22.05 Per Cent Less Tonnage

The story is told in another way. The revenue freight carried by the property was 22.05 per cent less than in 1920. The total operating revenues were 12.6 per cent less. As against a decrease of \$12,430,455 in operating revenues, however, there was a decrease of \$25,500,838, or 28.4 per cent in operating expenses and a resulting increase in net operating revenue of \$13,070,383, or 147.9 per cent. The road had an operating ratio in 1921 of 74.61; in 1920 it operated at a ratio of 91.05 per cent. The reasons for the improvement in the balance available for interest should, therefore, be evident as well as the manner in which the property, operating on its own resources, was able to com-

pensate for the lack of the governmental guarantees in 1920.

The Frisco system operates a total of 5,256 miles of line. Included in this total is 93 miles of double track, notably on the sections between St. Louis and Oklahoma City and between Kansas City, Mo., and Arcadia, Kan. The system, as a whole, serves a wide area because of its having lines south from both St. Louis and Kansas City, including lines into Oklahoma and also to Fort Worth, Tex., and beyond, and also to the southeast or to Memphis, Tenn., and Birmingham, Ala. The road has a large branch line mileage and, incidentally, many grades, both of which factors must be reflected in the final operating results.

Diversified Traffic

Naturally, under the conditions, the system's traffic is quite diversified. The figures for 1921 show that products of agriculture made up 16.04 per cent of the total tonnage; products of animals, 2.78 per cent; products of mines, 37.45 per cent; products of forests, 11.17 per cent and manufactures and miscellaneous, 28.76 per cent. Some of the leading commodities carried are bituminous coal, petroleum, livestock, lumber, lead and zinc and wheat and perishables.

Bituminous coal in 1921 made up 4,176,715 tons—or 30.3 per cent less than in 1920—and constituted 24.24 per cent of the total tonnage. This coal is derived from three fields: the Oklahoma field near Henrietta; the Arkansas district and the Kansas district centering at Pittsburg. The Frisco also secures some coal from the Birmingham, Ala., district, but this coal moves mainly east. The Frisco has been hit by the coal strike but it is our understanding that in spite of the strike it is still loading coal in considerable quantity, although not as much as its pre-strike average.

Refined petroleum and its products constituted 13.39 per cent of the total tonnage in 1921; crude petroleum, 0.79 per cent. In 1921 the system suffered a loss of 65 per cent in its crude petroleum tonnage and 16 per cent in refined petroleum. Nevertheless, the Frisco derives some 20 per cent of its total freight revenues from oil or oil products in one form or another. The reason is that it taps some of the best oil fields in Oklahoma, notably the mid-continent field centering on Tulsa. This oil moves principally through the St. Louis gateway. The Frisco has a fast freight schedule by which the oil is carried from Tulsa to St. Louis, 414 miles, in about 26 or 28 hours, the trains being allowed a 35-mile an hour maximum speed.

The lead and zinc is secured from the Joplin, Mo., district, in which area the Frisco, because of its many branch lines and strategic location, is probably the best fixed of any carrier serving the district.

Lumber and its products, which in 1921 constituted 11.17

ST. LOUIS-SAN FRANCISCO OPERATING RESULTS, 1912-1921

Year ended June 30	Freight revenue	Total operating revenue	Operating expenses	Net operating revenue	Operating ratio	Revenue tons	Rate per ton per mile, cents	Revenue, ton miles	Average haul	Revenue train load	Revenue car load
1912	\$27,505,798	\$42,100,364	\$28,709,589	\$13,390,775	68.19	16,985,882	1.01	2,714,876,424	160	255	16.15
1913	31,272,807	46,050,290	30,711,094	15,339,196	66.69	19,739,790	1.00	3,126,717,306	158	281	17.13
1914	30,202,499	44,923,569	33,270,600	11,652,969	74.06	19,906,151	1.00	3,027,900,826	152	297	17.80
1915	29,485,596	42,974,573	29,839,038	13,135,534	69.45	18,762,319	0.95	3,100,939,639	165	330	19.26
1916	33,547,466	48,403,390	32,775,759	15,627,631	67.71	20,459,901	0.97	3,452,384,669	169	334	19.31
Year ended Dec. 31											
1916	36,555,444	53,119,999	35,646,779	17,473,220	67.11	21,270,024	0.99	3,697,396,315	174	337	19.24
1917	39,421,538	59,676,657	39,610,818	20,065,839	66.38	23,011,162	0.99	3,963,259,492	172	382	21.58
1918	47,161,818	72,475,313	57,807,310	14,668,004	79.76	22,998,106	1.13	4,155,542,672	181	392	23.45
1919	53,558,494	82,202,919	64,069,624	18,133,295	77.94	21,439,266	1.33	4,036,818,931	188	380	21.77
1920	66,338,922	98,723,040	89,886,545	8,836,495	91.05	24,718,345	1.44	4,621,380,827	187	398	23.44
1921	59,088,309	86,292,584	64,385,707	21,906,879	74.61	19,266,914	1.69	3,502,727,271	182	363	21.62

per cent of the total tonnage, is secured primarily on the line paralleling the Red river and extending eastward to Hope, Ark. The road has a large livestock movement primarily to East St. Louis and originating in the territory in Texas beyond Fort Worth; this traffic, therefore, receives a long haul. From Kansas City, Wichita and Oklahoma City there is a considerable eastbound tonnage in dressed meats. Northeastern Arkansas and southeastern Missouri give the system a sizable and growing traffic in such commodities as cotton, grain, cantaloupes, watermelons, etc. These details give a rough idea of what the Frisco's business really is. The Frisco is noted for its fast freight service. From St. Louis to Fort Worth, 735 miles, this service gives a third morning delivery; from St. Louis to Oklahoma City, 542 miles, third day, and from Kansas City to Birmingham, 733 miles, 50 hours.

The revenue tonnage carried by the Frisco in 1921 totaled 19,266,914 as compared with 24,718,345 in 1920—in other words, a reduction of 22.05 per cent. The reductions were general. They were especially severe in lead and zinc. There were increases in wheat, in citrous fruits and in potatoes and also in products of animals. The freight revenues for 1921 totaled \$59,088,309 as compared with \$66,338,922 in 1920, a reduction of 10.9 per cent. The reason for the smaller proportionate decrease in revenues as compared with tonnage was an increased rate per ton-mile. The rate for 1921 was 1.69 cents as against 1.44 cents in 1920; there was a decrease in the average haul. Passenger revenues totaled \$21,360,570, a decrease from 1920 of 18.9 per cent. The total revenues of \$86,292,584 compared with \$98,723,040 in 1920, a decrease of \$12,430,455 or 12.6 per cent.

Operating Expenses Decreased 28.4 Per Cent

In 1921 operating expenses totaled \$64,385,707 as compared with \$89,886,545 in 1920, a decrease of \$25,500,838 or 28.4 per cent. There were decreases of 39.2 per cent in maintenance of way; of 33.5 per cent in maintenance of equipment, and of 24.4 per cent in transportation.

With reference to maintenance, President J. M. Kurn says in his remarks: "The property of the company has not only been adequately maintained during the year, but, in fact, its physical condition has been materially improved. The adequacy of maintenance expenditures cannot always be accurately gaged by the mere money amount thereof. Several factors have contributed in 1921 to the ability of the company to secure greater results from a given amount of money expended for maintenance. Wage rates were reduced as a result of the decision of the United States Labor Board, effective July 1, 1921. The price of some materials, of which there is a relatively large consumption in maintenance work, has receded from the peak which grew out of war conditions. The efficiency of labor has shown a decided improvement, as the weakening of morale and the generally disturbed conditions, which were the aftermath of the war and federal control, have been gradually disappearing. This is particularly true with respect to labor employed in maintenance of equipment. The excess of maintenance expenditures in 1920 over similar expenditures in 1921 was chargeable also, in a considerable measure, to the inclusion in the 1920 charges of large sums lapping over from previous periods, which were incurred in connection with additions and betterments work during federal control, the accounting for which had not been properly closed out by the federal management of the property."

The figures show, with further reference to labor, that the average number of employees in 1921 was 24,459 and in 1920, 30,671, a decrease of 6,212. Of the decrease, 1,827 was in section men. The maintenance expenditures per mile in 1921 totaled \$2,126 as compared with \$3,501 in 1920. This was partly due to savings in wage and material costs; there was also less material applied. The tie renewals for

the year totaled 1,333,812 as against 1,785,099 in 1920. In the case of rail, 6,717 tons, or 47.49 miles of new 90-lb. rail, were laid as against 28,154 tons or 199.07 miles in 1920. Ballast was applied on 118.34 miles of track; in 1920, on 208.70 miles.

Equipment Rehabilitation and Repair Costs

The maintenance of equipment, in which there was a total reduction in 1921 as compared with 1920 of 33.5 per cent, showed some interesting figures of costs per unit. Thus freight car repairs per unit owned in 1921 were \$107.68, the lowest figure since 1917. In 1920 the cost per car was \$229.81; in 1919, \$168.93; in 1918, \$187.51 and in 1917, \$103.10. The number of cars rebuilt or overhauled in 1921 was not as great as in 1920; in 1921, 1,501 cars were rebuilt complete and in addition 1,680 were reinforced with steel ends, etc. In 1920, 2,337 cars were rebuilt complete; in both years a large amount of work was done on refrigerator cars. Of course, part of these charges were to addition and betterments. At any rate, the Frisco had on April 1, 1922, a percentage of bad order cars of 8.2, which figure is low comparatively and indicates a favorable equipment condition.

During the year 496 locomotives were given classified repairs as compared with 506 in 1920; in view of the 1921 falling off in traffic, this result looks good. Steam locomotive repairs per unit owned during the year averaged \$8,795. The savings as against the preceding year are indicated by a 1920 figure of \$11,380. The Frisco's percentage of un-serviceable locomotives at present is about the same as the average for the country as a whole. Concerning this matter of equipment maintenance, Mr. Kurn says: "Elsewhere . . . there is set forth the extensive accomplishment in renewal and rehabilitation of rolling stock equipment during the year. The large expenditures made therefore to capital account have had a direct effect in reducing the expenditures necessary for adequate maintenance."

Frisco improvements during 1921 were many. Some of the important work was the completion of the construction of 28 miles of double track, namely: Eureka, Mo., to Pacific, 6.89 miles; Sleeper, Mo., to Lebanon, 8.82 miles; Monett, Mo., to Globe, 1.37 miles; Spring Hill, Kans., to Olathe, 9.62 miles and between Amory, Miss., and Aberdeen Jct., 0.81 miles. The road at the end of the year had a total of 93 miles of double track. The total additions and betterments charged to capital account during the year were \$5,019,293, of which amount \$2,033,966 was in improvements to existing equipment and \$674,835 to additional main tracks. For power plants, machinery and tools there was expended \$489,812, which indicates a realization of the importance of this essential factor.

For 1922 the road has a program calling for the expenditure of an additional \$5,000,000. Some of the important items are: Completion of double track, Spring Hill, Kan., to Paola; double track, Webster Groves, Mo., to Valley Park, including a reduction in grade from 1.5 per cent to .85; grade revision work near St. Johns, Mo., reducing the grade from 1.25 to 0.6 per cent and a change of line at Garnsey, Mo., with a grade revision from 1.5 to 0.8 per cent. It is also proposed to lay 170 miles of 90-lb. rail in place of present 85-lb.; to spend \$250,000 for steel underframes, etc., for passenger equipment; \$350,000 for additions and betterments to locomotives and \$1,400,000 for additions and betterments on freight cars. Ten stalls were added to the roundhouse at Fort Smith and five at Fort Worth.

The evidence on the whole is that the St. Louis-San Francisco during 1921 improved both its financial and physical condition to a marked extent and that this improvement should be continued into 1922. The property is apparently prepared to handle a much larger volume of business than at present and should be able to realize on any improvement in its territory during the coming year.

Extent of Russia's Ruin and Chances of Recovery

Famine Ridden and Bankrupt, Her Only Hope Is in Aid From
Financiers Who Dare to Risk Fortunes

By a Special Correspondent

Moscow.

IS RUSSIA coming or going?

The answer to this question is not in the hands of the Russians but of the western world, and particularly of the business men of America. If they are bold enough and have the money to risk and want the big earnings that may result, the opportunity is there.

The Genoa Conference gathered to answer this question, but without Americans, Britain and France and all the other nations represented are powerless. They have neither the money nor the means to reconstruct Russia, nor have they the goodwill of the Russians in the sense that the Americans, not interested in internal politics, have it. The important facts about Russia, as gathered first hand by the writer, after traveling some 10,000 miles on her soil, are the following:

The Facts About Russia

First, *she is beset by an immense famine* that will, unchecked, last for another year at least, taking a toll of a million or two of lives. I have seen with my own eyes many hundreds of her dead, scattered here and there, and indicative of thousands and thousands of others to be seen if anyone took the trouble to seek them.

Second, *communism is dead* in Russia. The Soviet government has utterly failed in realizing one of the biggest and noblest and oldest dreams entertained by humanity. Her intellectuals, largely mixed with Jews, and influenced by Germans and socialists of every school, and helped by the great war, pulled down the reasonably good government of the Czar. In their turn they have shown themselves incapable of government. They floundered for three years, in an experiment so tragic that but for its tragedies it would be ludicrous. Now they have learned that water cannot be made to run uphill.

Third, *the present Soviet government is making an effort to hold on*, though its members are tired out and would, in many instances, welcome or consent to stepping down if a reasonably and sufficiently socialistic government could be found to succeed them and spare their lives. The notable exception in the government is probably Trotzky, who is an ambitious opportunist. But this government, like all others, is changing in personnel and in point of view, and is bound to go. Should Lenin die, it might go overnight, as he is its dictator and backbone. For this government to go out like a candle might mean a new revolution in Russia, and this few in Russia want. All they want is peace and a chance to live.

Fourth, *Russia's ruin is far more moral and social than material*. I have seen the majority of her cities, her business centers, and nowhere is to be encountered anything like the absolute destruction such as I have seen in France's war wrecked northern provinces. Her railways function reasonably well, all things considered, and within a year or so could be revived as have been those of Roumania, which two years ago were in an apparently hopeless condition.

Fifth, *there is no disposition to attempt to use the Red Army against Europe*. The best proof of this statement is that the Red Army is incapable of such an adventure. It is a fairly good police service, and could do some damage to the armies of such countries as Poland and Roumania, but not in any serious degree. From a military point of view, any such adventure would be pre-doomed to failure.

Sixth, *the Soviet government is virtually bankrupt*. It has

on hand in gold coin and in diamonds and odd bulks of gold and silver bullion a total value of possibly \$150,000,000. Against this it has issued to date upwards of ten trillions of paper roubles and by the end of the year will have printed double that amount. A dollar bill is worth today in Russia about two million of these roubles. The rate of depreciation may be judged by the fact that last September a dollar bill was worth fifty thousand roubles. Banking is in the hands of the government.

Seventh, *hand in hand with the famine there is a frantic and fantastic effort at trade in Russia*. As there is little real production, this trade takes the form of speculation. Everybody is doing it—men, women and children. Internal free trade was allowed last August by Moscow decree, and it has grown apace. External trade is in the hands of the government, and this stifles what little trade there might otherwise be with the outside world, through the Baltic and Black seas and over the Polish and Roumanian borders. As no one trusts the government banks, every man is his own banker, and as fast as he gets hold of roubles, in trade, he converts them into foreign paper moneys, especially dollars.

Eighth, *there is good order, at least so far as concerns the foreigner, throughout Russia*. His life and property are safe. Americans are treated with a peculiar deference, partly as a result of the Russian's general hospitable attitude toward a foreign visitor, partly due to the knowledge that the government will protect these people from whom they hope so much. This good order is also due to the presence of the American Relief Administration. Its offices and agents are in every city center and Soviet officials, under the eye of decent people on whom they are dependent for the precious daily bread, are loth to commit their former deeds.

Quo Vadis?

The above are the facts, looked at from the point of view of business. It may be that already the tide is turning in Russia, that she has hit the bottom of distress and disease and disaster, and is on the upward grade; that the mysterious forces of circumstances have relented.

If not, and if left to herself Russia may be doomed to disappear from the face of normal life as did in the third and fourth centuries A.D. the great lands of northern Mesopotamia, rich in agriculture and wonderful cities. It will be remembered that after the breaking of the Roman grip on these lands, a grip that guaranteed law and order and good highways, chaos came and has remained. It has long been one of the dreams of active minds to restore that ancient prosperity, but to this day the dream is unrealized.

As in those days the fields of Mesopotamia helped to feed the Roman Empire, so in modern days Russia helped to feed Europe. Other ways were found of getting food for the Romans and other peoples of the Mediterranean. Europe may have to find other ways of feeding herself without Russia.

Left to herself, at best, Russia, from a business point of view, will become for the next few years the prey of the small trader, carrying his goods in a grip, so to speak, exploiting his customers rather than improving their trade. Then, with no more gold and diamonds and second-hand furs with which to barter, she might well die out. Her cities might cease to serve any useful purpose, as seems already

the fate awaiting Petrograd and her imperial palaces, and the peasants remain to miserably till the soil, rid of the thin veneer of culture forced on them from the townsfolk during the past 200 years. Through sheer fatigue and inertia, her railways might cease to function at all.

The Essentials of Reconstruction

If big business decides to take the plunge, it must wade in with boots, not slippers. It must not go in gingerly, grab a stake and make a getaway. It must not expect returns for five years. Also, it must arrange matters so it will make, if it does make anything, its hundreds of per cent in profits, to offset the risk. It must work through the government, so its hand will not be seen too publicly and increase its risks by stirring up a hostile sentiment.

The Russians are susceptible, ready to believe anything. This very winter, it was commonly stated by the crowd that the American Relief Administration was exploiting Russia. How? No one could say just how, in the face of the food shipped in, but the very people receiving the food were ready to believe this nonsense. Torn for years by civil war and murder, suspicion is the breath of life in Russia.

When Litvinoff, under-secretary of state, signed at Riga last summer an agreement making it possible for American charity to come into Russia, he did so with fear and trembling. He made a remark then that caused much good-humored comment among the Americans. "Food is a weapon," he argued, showing that he feared the food might in some way be used to undermine the Soviet government. Just how he could not explain to himself, yet he believed what he said. Working through the government involves making an agreement with it. Despite all that has been said, and of all of the facts, it is probable that any agreement the Soviet government makes it will keep, so far as it can. It kept its agreement to pay indemnity to Poland, for the war waged a couple of springs ago. It has so far as able kept its agreement with the American Relief Administration, which is patently an opening wedge for American business, if Americans care to take advantage of this fact. In the early months it was uphill work to help the Russians, due to an ignorant government, beset with internal politics and ambitions, and tied up, hard and fast, in its own reams of paper, of red stamps and tape, a machinery far more complicated and ridiculous than anything evolved by the Czar's old government, or any other government with which I am familiar. But this must be said of the Soviet government—it does not mind breaking its own laws. It, too, had a prohibition law, but when convenient it broke or changed the law and let its citizens do the same.

Those who go into Russia with fear and trembling will not travel far. There is the German boggy. The Germans so far have done little but try to make some highly profitable get-rich-quick speculations in Russia. They have not sufficient capital to exploit Russia, as is so commonly feared.

The first essential of reconstruction involves, on the part of Soviet Russia, the recognition of private property and the freedom of its citizens in foreign trade. Both these points have long since been settled in principle. As to recognition of its old debts, this too will be done, though it matters little to the present generation, as they are too huge to be paid now. Houses and lands may be sold to all comers and be used for government revenue.

When this brushwood is cleared away, it remains for big business to organize itself in some such manner as the old Vanderlip syndicate attempted to do.

The other essentials, in their order, are food, the restoration of agriculture, the repair of the railways, and a better money. This is a large order, and will cover years, but the start once made the reconstruction will come far quicker than might be judged from the outside. One has but to consider what France today is accomplishing, how she is fighting

back to commercial independence despite her tremendous losses; how little Hungary is living, despite the treaty imposed by the Allies taking away two-thirds of her lands; what Serbia has done to get back to normal life, although her lands were occupied by the enemy and her people forced to evacuate during the general war.

"Our land is great and fruitful, but there is no order in it. Come and reign and rule over us." This was the message and invitation sent by the Slav republic of Novgorod to the invading Norsemen, in the ninth century.

Under Bolsheviks or Imperialists or New Democrats, Russia is now a country to be worked as a colony. It is a country comparable to our West of the post Civil War days, say in the late 'eighties or the early 'nineties, when the Cherokee strip was opened, a little later to become part of the great state of Oklahoma. Colonizing means work and money and time and patience and courage and hardship. Who will undertake this Russian job?

Locomotive Cab Ventilating Set

THE PROBLEM of locomotive cab ventilation is a more or less serious one, especially on roads where steam locomotives are required to operate in tunnels. An unusually interesting method of solving this problem has been developed by the B. F. Sturtevant Company, Boston, Mass., the essential part of the apparatus being the ventilating set illustrated. These sets have been applied in one case to the locomotive cabs of Mallet locomotives operating in districts where tunnel clearances are close and the grade adverse to the movement of trains. According to an officer on the road in question the transfer of Mallet locomotives to one of the branch lines where the conditions described above existed resulted in forcing attention to the problem of locomotive



Sturtevant Cab Ventilating Unit

cab ventilation. Experiments were conducted in an effort to provide better ventilation and it was found by using the Sturtevant electrically-driven ventilating sets, two units to the locomotive, the atmospheric conditions in the cab could be materially improved.

The ventilating sets were operated electrically by an electric headlight turbo-generator installed for the purpose. Two sets were applied to the locomotive, located under the boiler ahead of the firebox. The intake from the fan gathered the air at a point about 6 in. above the track. One fan delivered air to the right side of the locomotive immediately in front of the engineman and the other to the left side. In order to get the best results, it was found necessary to make the cab nearly air-tight so that the fresh air delivery inside the cab would create a pressure in excess of that surrounding the cab, preventing foul gases from entering.

Sturtevant portable ready-to-run ventilating sets are made in five sizes running at speeds up to 3,400 r.p.m. and delivering from 58 to 1,440 cu. ft. of free air per min.



Maintenance Reserve Items Hurt I. C.'s Showing

Net After Fixed Charges for 1921, \$9,656,275 as Compared
with 1920 Figure of \$13,434,841

THE ILLINOIS CENTRAL'S figure of net after fixed charges in the corporate income account in the annual report was, for the year ended December 31, 1921, \$9,656,275. This was a reduction of \$3,778,567 from the figure for 1920—\$13,434,841. It does not, therefore, evidence the improvement for the year which was to have been expected from the favorable monthly reports of earnings and expenses. The Illinois Central did, however, show improvement in its net in 1921 as compared with 1920. This improvement was shown in the figure of net railway operating income which in 1921 was \$17,542,228 and in 1920, \$6,343,246, the increase as between the two years being \$11,198,982. The reason this improvement is not reflected in the corporate income account is the method of accounting followed, which factor it is advisable to point out so that incorrect impressions may not be gained.

Reserve for Maintenance

The outstanding changes in the corporate income account, other than those made necessary to show properly the standard return and guaranty, were a reduction of \$2,180,644 in non-operating income and an increase of \$7,564,368 in deductions from gross income. Non-operating income in 1921 was \$5,039,238, as against \$7,219,882 in 1920, the reduction being primarily due to the non-receipt of interest on Louisville, New Orleans & Texas second mortgage income bonds from which in 1920 there was received \$2,081,014. Deductions from gross income totaled \$19,735,213, an increase, as above noted, of \$7,564,368 over 1920. The important factor in this account was in "Miscellaneous Income Charges" which in 1921 increased \$7,788,083, of which \$6,851,542 was due to charging this account the amount named and crediting an account in the general balance sheet, "U. S. Government Guaranty under Section 209 . . ." in reduction of the company's claim against the government, made necessary by the cancellation of a reserve for maintenance. In further explanation of this item, the annual report states:

"In explanation of this reserve it should be stated that last year there was in 'Maintenance of Way and Structures Expenses' \$2,744,698 and in 'Maintenance of Equipment Expenses' \$4,109,844, a total of \$6,854,542, to cover the additional amount which it was understood your company was entitled to expend for maintenance

. . . during the guaranty period and which it was necessary to state on the books in order that the amount would be available for these purposes. The amounts so charged to expenses were carried as a reserve to be expended in the future and were shown on the general balance sheet in the account, 'Other Unadjusted Credits' under the heading 'Unadjusted Credits.' The Interstate Commerce Commission, in an order dated December 15, 1921, entitled, 'In the matter of Final Settlement under Section 209 of the Transportation Act, 1920' prescribed a different method for adjusting maintenance expenses of the guaranty period. As a consequence the entries made on the books in the preceding year were reversed in the current year and 'Railway Operating Expenses' was credited and 'Other Unadjusted Credits' was debited a like amount. These entries necessitated an additional entry debiting 'Miscellaneous Income Charges' \$6,854,542, and crediting the same amount to the general balance sheet account 'U. S. Gov't Guaranty under Section 209 . . .'"

Santa Fe Showed Equalization Reserves Better

Because of the inclusion of the reserve items in the 1920 accounts, the total for maintenance of way in that year is shown in the 1920 annual report as \$29,034,954—this amount being corrected (because of the elimination of the reserve) in the 1921 report to \$25,870,907. Maintenance of equipment was given in the 1920 report as \$42,028,103, which item was corrected in the 1921 report's comparative statement to read \$37,344,277. The result of the inclusion of the reserves was shown further in total expenses which were given in 1920 as \$143,208,180, or 98.39 per cent of the operating revenues. This figure is corrected in the 1921 accounts to be \$134,181,514 which makes the 1920 operating ratio not 98.39 as previously stated but only 92.44. All this arrangement is a bit unfortunate particularly because the 1920 annual report did not make it clear that reserve items were included in the maintenance expenses as given in that report.

The Atchison, Topeka & Santa Fe, which similarly established maintenance reserves, made rather a better job of it in its annual reports for 1920 and 1921. In the Santa Fe annual report for 1920 the road showed a sum of \$13,374,976, representing what the Santa Fe called an equalization reserve "for the purpose of approximating the amount of the maintenance expenditures to which the company was entitled under the Transportation Act." "The setting up of these equalization accounts," the Santa Fe's 1920 report continued, "which has not heretofore been customary for this company

is reflected in the amount of \$14,030,036 in the decrease in the net railway operating income. . . for the year 1920." Further than that, in the statement of the primary accounts, there appeared, as there did not appear in the 1920 Illinois Central report, items as follows: Under maintenance of way, "Equalization,—way and structures, \$8,711,056" and under maintenance of equipment, "Equalization-Equipment, \$4,663,919." The final result was that when corrections had to be made in the Santa Fe's 1921 report, the accounts did not have to be restated but instead the equalization figures were shown as debits or credits and the matter in both the 1920 and 1921 reports was clear at all times.

The Illinois Central by its method of showing the reserve items suffered the unfortunate result—which the Santa Fe did not suffer—of making its 1920 accounts look actually poorer than they really were. A false impression might have been gained which would have been regrettable in the case of a carrier like the Illinois Central which has been so careful, fair and above-board in taking the public into its confidence. We doubt not that there may be misrepresentation of this situation in various quarters which explains why so much space is here devoted to keeping the record straight.

Illinois Central Leader in Public Relations Work

The attention which the Illinois Central has given to taking the public into its confidence is one of the most pleasant developments in modern railroading. A whole volume might be written about the methods followed by the road and about the success which it has been having. Generally speaking, one of the most important factors in the method followed is to publish in the form of paid advertising in every newspaper published in the territory served interesting and informative details about the railroad problem and the Illinois Central's activities. The result of this and the accompanying parts of the plan has been an extremely favorable public opinion towards Illinois Central in the communities through which it runs, in which respect the road is in a much better position than most other of the country's railroads. The Illinois Central is recognized for its efficiency in management and operation generally. Its success in its public relations work shows it to be efficient in this also and very much in the van of progress as regards its realization of the importance of this feature of its activities.

Revenues and Expenses

The Illinois Central in 1921 had freight revenues of \$107,092,091, an increase of \$913,205 over 1920. Its revenue tons and ton-miles were less than in 1920 but its receipts per ton-mile were greater. The tonnage carried was 40,415,089 as compared with 49,233,079 in 1920. The ton-miles in 1921 totaled 11,084,093,960, a reduction of 19.24 per cent from 1920. The heaviest decreases were in bituminous coal—coal constitutes about 40 to 45 per cent of the total traffic—in lumber and forest products, in manufactures and miscellaneous and in merchandise. The tonnage of grain was greatly increased and, to a lesser extent, that of perishables. With reference to the receipts per ton-mile the figures show for 1921, 0.966 cents—which, incidentally is a comparatively low figure—as against 0.774 in 1920.

Because of a reduction of 8.51 per cent in passenger revenues, the increase in freight revenues was not reflected in total railway operating revenues. These totaled \$141,127,066 as against \$145,154,272 in 1920, a reduction of \$4,027,206 or 2.77 per cent. As against this reduction of over \$4,000,000 in revenues, there was a reduction of \$17,329,181 or 12.91 per cent in operating expenses, the expenses in 1921 being \$116,852,333 as compared with \$134,181,514 (excluding the charges for maintenance reserve) in 1920. Maintenance of way and structures was decreased 13.27 per cent, maintenance of equipment, 7.37 per cent and transportation, 17.55 per cent. The savings were due to lessened

traffic, decreased wage costs, lower material and fuel costs, etc. There is no evidence of decreased maintenance. In 1921 there were 219 miles of track laid with 90-lb. rail.

Additions to Equipment

During the year the road made important changes in its motive power as is evidenced by the fact that the total number of locomotives increased 17, but the total tractive effort of all locomotives, 5,911,927 lb. The reason was the acquisition of 100 Mikado and 25 eight-wheel switching locomotives while 108 smaller locomotives were disposed of. As to passenger cars, the details show 55 new cars added and 10 disposed of. In the case of freight cars 3,620 cars were added and 3,161 dropped, a net increase of 459. It is interesting and important to note that in December the Illinois Central had an average percentage of bad-order cars of but 6.6 per cent. It is understood that the average is slightly higher at this time.

I. C. C. and State Commissions

Adopt Plan of Co-operation

WASHINGTON, D. C.

A PLAN of co-operation between the Interstate Commerce Commission and the State commissions in cases involving conflicts of jurisdiction, which provides for joint conferences and in some cases joint hearings, was announced on May 3 by Chairman McChord of the Interstate Commerce Commission and President Jackson of the National Association of Railway and Utilities Commissioners in the form of a report of a joint committee of the federal and State commissions which has been holding conferences recently. The report of the joint committee follows in part:

Public regulation of our railroads is performed in part by a commission representing the federal government and in part by commissions representing the various states. Conflicts of jurisdiction between the two systems of public regulation have arisen from time to time, resulting in litigation and action by the courts; but the federal and state commissions were alike created in the public interest and have a common purpose, namely, the maintenance of a transportation system which will in all respects best meet the public needs. In view of this common purpose they should, and we believe they can, work together for its attainment without conflict or resort to litigation. Such co-operation is contemplated by the Interstate Commerce Act as interpreted by the Supreme Court and is highly desirable in the public interest.

The prime essential to such co-operation is realization of the nature and difficulties of the common problem. The state commissions realize that the railroads form a national transportation system which is not split into parts by state lines and that the public interest demands a rate structure, state and interstate, as simple and harmonious as practicable. The Interstate Commerce Commission realizes that there is danger in over-centralization of authority, that the field of regulation is vast, and that the state commissions are often better informed than itself in regard to local conditions and local needs.

Following the general rate increase of 1920 the Interstate Commerce Commission, in certain instances where corresponding increases did not become effective within the states issued orders affecting intrastate rates. Following the decision of the Supreme Court of the United States in the Wisconsin Passenger Fare case, action has been taken by several state commissions which has enabled the Interstate Commerce Commission to vacate certain of its orders affecting intrastate traffic within those states. It is anticipated that similar action will follow in other states.

In a yet more important aspect co-operation looks forward to and has in view the avoidance, so far as the public interest will permit, of such orders in the future. Paragraph 3 of section 13 of the interstate commerce act authorizes the Interstate Commerce Commission to avail itself of the co-operation, services, records, and facilities of state commissions, to confer with them with respect to the relationship between rate structures and practices of carriers, and to hold joint hearings with them "where the rate-making authority of a state is or may be affected by the action taken by the commission." Our common purpose is to give the utmost force and effect to this provision of the law.

It is appreciated that time and experience may be required for the full development of methods and rules of procedure. Pending

the establishment thereof, and for the purpose of making such co-operation immediately effective, it is the opinion of representatives of the Interstate Commerce Commission and of the state commissions that, except as in special cases it may be found desirable to deviate therefrom, the following procedure be followed:

Where petitions are filed with the Interstate Commerce Commission alleging that intrastate rates unjustly discriminate against interstate commerce, or persons or localities engaged therein and asking the Commission to remove such discrimination, if either a state commission having jurisdiction over rates thus attacked, or the federal commission, desires a conference it should notify the other without delay and thereupon such a conference should be arranged, likewise without delay. If the case goes to trial, a joint hearing by the Interstate Commerce Commission and the commission of the state affected should be held, provided a proceeding or proceedings be pending before the state commission in which action can be taken by it upon the common record. Such joint hearing should be followed by a conference to consider the facts developed of record so as to provide opportunity for the removal of the unlawful discrimination, if any, by agreement.

Joint conference should be held on complaints attacking interstate rates in those cases where the decision of the Interstate Commerce Commission appears likely to affect, in substantial and important respects, the relationship between state and interstate rate structures; likewise, conferences should be held in the case of complaints attacking intrastate rates in those cases where the decision of the state commission appears likely to affect, in substantial and important respects, the relationship between state and interstate rate structures. Participation in the ensuing hearings, or in conferences following submission, will be upon invitation of the Interstate Commerce Commission, if the complaint is filed with it, or of the state commission if the complaint is filed with it. Joint hearings will be appropriate where similar issues are pending before the Interstate Commerce Commission

and a state commission, or conferences pending the decision of cases where there has been no participation in the prior hearings.

In joint hearings involving interstate rates, the rules of practice prescribed by the Interstate Commerce Commission shall govern as far as applicable.

The federal and state commissions should feel free to suggest to each other, and the state commissions to hold among themselves, conferences on matters arising under their respective jurisdictions, with a view to harmonizing in so far as practicable rates and practices in neighboring states by appropriate action of the commissions of those states without proceedings before the federal commission.

It is desirable that there be continued, in so far as practicable, the practice of the Interstate Commerce Commission of calling upon a state commission to hold hearings for it upon applications for certificates of public convenience and necessity, involving construction of new lines or abandonment of old lines. In such matters joint conferences between the Interstate Commerce Commission and a state commission may also be held upon request of either commission.

The interstate commerce act and the rules of the Interstate Commerce Commission provide for notice to the states in certain matters affecting them, and the Interstate Commerce Commission has been complying therewith. The state commissions should develop methods of keeping the Interstate Commerce Commission advised on matters before them in which it may have an interest such as is indicated by the foregoing text.

It is realized that the co-operative action here provided for will be productive of delay in disposing of important matters unless the federal and state commissions respectively act with the utmost promptitude compatible with the circumstances.

Applying the co-operative principle, conferences may be arranged for the development of car service, distribution and administration.

Wabash Shows Increases in Fast Freight Traffic

Net After Rentals in 1921 \$3,863,340, as Compared with Deficit of \$3,817,671 in 1920

THE WABASH reports for the year ended December 31, 1921, a net after fixed charges of \$2,017,576. This compares with a net in 1920 of \$1,983,943—an improvement of \$33,633 as between the two years. The 1921 income account, however, includes in non-operating income a credit of \$1,245,233 "to offset debit items in this statement pertaining to the guaranty period," of which amount \$509,018 "represents unaudited items which are included in accordance with order of Interstate Commerce Commission dated December 15, 1921, finance docket No. 1606." The net for 1921 is the best since 1917, in which year the Wabash reported a net after fixed charges of \$4,172,045; in 1916 it reported \$5,306,498. All these figures mean that the Wabash in 1921, operating on its own resources, did not restore its corporate earnings to their pre-federal-control or standard return level.

The revenue tonnage carried by the Wabash in 1921 was 13.44 per cent less than in 1920. In spite of this reduction in traffic, the road did show much better operating results than those of 1920, although this improvement is not reflected in the corporate income account because of the fact that comparisons with 1920 must take into consideration the factors of standard return and guaranty. The improvement in actual operating results is best shown in the figure of net railway operating income. In 1921 this figure was \$3,863,340. It compared with a figure in red in 1920 of \$3,817,671 which deficit, of course, was compensated for by the standard return and guaranty. The Wabash had a standard return of about \$5,800,000. In 1918 it earned for the government about \$3,700,000; in 1919, about \$800,000. Thus it appears that the 1921 result was the best since the commencement of federal control, but that it was not as good as the results prior thereto. The striking improvement as between 1921 and 1920, which changed a deficit of \$3,817,-

671 in 1920 to a net of \$3,863,340, is further evidenced in an operating ratio of 84.45 in 1921 as against a figure for 1920 of 98.18. In 1917 the ratio was 70.34; in 1916, but 65.94.

Perishables and Packing House Products Increase

The Wabash operates a total mileage of 2,473, of which it owns 2,034 and operates the remainder under trackage arrangements. Of the total owned mileage 322 is double track. The principal lines extend from St. Louis to Chicago and from Buffalo to Kansas City. In the case of the latter line the Wabash uses the Grand Trunk between the Niagara frontier and Delray, a distance of 228 miles. The Wabash also serves, among other important centers, Toledo, Omaha, Des Moines, etc., in some of which cities it has to use trackage rights to secure entrance. The Wabash tonnage is diversified. It serves a coal area in Illinois between St. Louis and Decatur, but bituminous makes up only 25 to 30 per cent of the total tonnage. There is also a sizeable business in anthracite coal received from the anthracite carriers at the Niagara frontier.

The Wabash has an enviable reputation for fast freight service. It receives from connecting carriers at the Niagara frontier a large tonnage of manufactures and miscellaneous freight for westbound movement. Eastbound it moves a heavy traffic in fresh fruits and perishables received from connections at Kansas City or St. Louis. It has a sizeable eastbound business in packing house products from Kansas City, this traffic receiving in the summer months a fourth morning delivery at New York. The road has the advantage on this Kansas City business, incidentally, that the traffic does not have to move through the terminals at St. Louis.

The Wabash is not a rich road. It has not been in a position to spend the money that it might like to have spent

for capital improvements to enable it to operate with utmost economy. It suffers, as will be noted below, from having a high debit per diem balance and from rentals. The road, however, seems to be well provided with motive power and its power is in good condition. It is using Santa Fe locomotives between East St. Louis and Chicago, these engines being rated at 5,500 tons from the coal district centering at Staunton and Mt. Olive, south of Decatur. From Kansas City to Hannibal, Mo., and also from Decatur east to Detroit, Mikados are used; between Hannibal and Decatur, Consolidations; and in Canada, east of Detroit, Prairie type locomotives. The main shops of the road are at Decatur. These were built in 1912 and 1913 and have a capacity of 60 classified repairs per month although they are not worked to that capacity. The shops at Moberly, Mo., have a capacity of 15 classified repairs.

The revenue tonnage carried by the Wabash in 1921 totaled 14,581,966, as noted above, 13.44 per cent less than in 1920. Of the 1921 tonnage, 21.61 per cent was in products of agriculture; 6.04 per cent products of animals; 35.22 per cent, products of mines; 6.68 per cent, products of forests and 25.49, manufactures and miscellaneous. It is interesting to observe in connection with what has been said above, that although the total tonnage decreased, there were increases of 6.99 per cent in products of agriculture and of 14.67 per cent in products of animals. The tonnage of fresh fruits and vegetables does not bulk large in the total but there were increases of 73.31 per cent in citrus fruits; of 24.20 per cent in other fresh fruits; of 69.40 per cent in potatoes and of 47.76 per cent in other fresh vegetables. Under products of animals there were increases of 18.42 per cent in packing house products; of 73.18 per cent in poultry; of 86.33 per cent in eggs, etc. These facts presumably represent the result of the efficiency with which the fast freight service is conducted and of the efforts of the traffic department in soliciting the business.

The Coal Tonnage

The bituminous coal carried by the Wabash in 1921 totaled 3,369,218 tons or 29.18 per cent less than in 1920. The anthracite tonnage totaled 498,950. The Wabash is one of the roads hit by the effects of the coal strike. Presumably it is at present moving practically no anthracite. Its bituminous loadings the week ending April 8 totaled only 92 cars. Its loadings in March and April, 1921, approximated about 500 to 600 cars weekly. Because of the relative unimportance of the coal traffic in the total tonnage, it is evident, however, that the Wabash will not be seriously hurt by the strike.

The freight revenues of the Wabash in 1921 totaled \$45,688,528, an increase of \$2,363,828, or 5.46 per cent over 1920. The increase, with a decrease in revenue tonnage, was partly due to the changed character of the tonnage whereby there was a greater quantity of manifest freight moved, both relatively to the total tonnage and actually. The revenue per ton-mile in 1921 was 1.17 cents; in 1920, but 0.95 cents.

Savings in Expenses

The total revenues for the year were \$59,217,692, a reduction of \$764,590, or 1.27 per cent from 1920. As against this reduction in operating revenues there was a reduction of \$8,851,521 in operating expenses. The expenses in 1921 totaled \$50,007,874; in 1920, \$58,859,395. There were reductions of \$1,380,430 in maintenance of way; of \$2,923,716 in maintenance of equipment, and of \$4,714,637 in transportation, which reductions point out the drastic nature of the economies which were put into effect during the year.

The savings in maintenance of way totaled \$1,380,430, or 13.10 per cent, the largest savings being made in track laying and surfacing—namely in labor. The expenses for this purpose were reduced \$768,397. With reference to mate-

rial the figures show that the road laid in 1921, 10,788 tons of 90-lb. rail as compared with 21,178 tons in 1920, but double the amount laid each of the years immediately preceding 1920. Ties laid in main track totaled 831,237 as compared with 797,576 in 1920. Ties laid in side track totaled 281,606, or more than the average for 1920 and preceding years. There were 178 miles of track rebalasted as compared with 165 in 1920 and lesser amounts in preceding years. These figures, on the whole, do not show that maintenance was cut unduly.

Maintenance of equipment was reduced \$2,923,716, or 19.84 per cent. On April 1, 1922, the Wabash's percentage of bad order cars was 13.8 per cent, not as low as it should be, but about the country's average. The percentage of un-serviceable locomotives on the same date was 13.8, indicating an extremely good motive power condition; the country's average on the same date was 20.1 per cent. During the year 405 locomotives were given classified repairs as compared with 455 in 1920, but the condition of power based on mileage remaining in all engines before due for next classified repairs, was estimated to be on December 31, 1921, 49.93 per cent as compared with 44.52 per cent on December 31, 1920. The average cost of repairs per locomotive mile in 1921 was 33 cents as compared with 37 cents in 1920. During the year 1,419 cars were rebuilt entirely or given extensive repairs at contract shops.

Fuel Economy

The transportation ratio for 1921 was 42.74 per cent. In 1920 it was 50.06 per cent. The expenses for transportation in 1921 totaled \$25,726,606, or \$4,714,637 less than in 1920. The largest savings were naturally in fuel and labor due to the smaller business handled and to lessened wages and costs. There were also sizeable savings in freight loss and damage. The Wabash has been giving a great deal of attention to fuel economy. For one thing, there is an instruction school operated and maintained, not by the road but by the enginemen themselves. This school has two cars and the men are encouraged by their fellow employees to attend. Further than that the road encourages the men by means of talks and bulletins. Crews that do extra good work are complimented by a letter from the general manager, etc. In 1921 the pounds of coal consumed per 1,000 gross ton-miles was 184, a reduction of 15 pounds from 1920 in spite of the increased tonnage of manifest and light-weight freight and the reduced tonnage of such heavy freight as coal, etc. The average cost of coal on the tender in 1921 averaged \$3.24, as compared with \$3.52 in 1920. The coal consumed was 1,438,797 tons, a reduction of 236,356 tons from 1920.

Finances

The Wabash suffers from the standpoint of rentals. In 1921 it had a debit hire of freight car balance of \$1,349,405. This was \$362,582 less than in 1920 but still sufficiently large to be a handicap. Joint facility rents in 1920 totaled \$1,753,139, indicating the importance also of that item. The company has a compensating asset, however, in its low fixed charges. It has outstanding \$138,492,967 capital stock, but funded debt in the amount of only \$74,183,959. The interest on funded debt in 1921 totaled \$3,629,803. The stock is made up of profit-sharing preferred "A" stock, convertible preferred "B," and common. The "A" stock is entitled to five per cent non-cumulative dividends but none have been paid since April 30, 1918, and no dividends have been declared on the "B" or common. The preferred "B" is convertible into the other issues at the rate of \$50 par value of preferred "A" and \$50 par value of common for each \$100 par value of the "B" stock. During 1921, \$1,828,000 was so converted, making a total converted since August 1, 1918, of \$37,796,800. On December 31, 1921, there was outstanding \$62,463,125 of common, \$65,098,400 of preferred "A" and \$10,931,442 of preferred "B."

Labor Leaders Withdraw from Wage Cut Hearing

Heads of Sixteen Organizations Protest Against Testimony on Behalf of Shippers and Public

REPRESENTATIVES OF the sixteen railroad labor organizations withdrew on April 28 from hearings before the Railroad Labor Board on proposed reductions in their rates of pay, after filing a protest against the appearance of the National Industrial Traffic League and the National Industrial Conference Board. Sometime ago the board announced that it would permit representatives of these organizations to appear before the board and present evidence as to their interest in the wage problem. Representatives of the labor organizations held a meeting at Chicago prior to the date set for this hearing and authorized Frank P. Walsh, Donald R. Richburg and J. H. Stevenson to file a brief of protest against the appearance of these organizations and authorizing them to withdraw from "further participation in such illegal proceedings" in event their protest was overruled. Before this protest could be registered, J. S. Burchmore, representing the National Industrial Traffic League, filed a brief which had been prepared. However, before representatives of the National Industrial Conference Board could begin their presentation, Mr. Walsh presented the employees' protest and after the chairman of the board ruled that, in accordance with a resolution adopted by the board, the parties would be heard, all of the labor leaders present withdrew.

Wage Cut Disputes Should Be Remanded

The board's hearings in the present controversy over the proposed reductions in the wages of railway employees have been so burdened with incompetent and irrelevant testimony that the whole question of readjustment of railway wages to meet present conditions should be remanded to the companies and their employees, Mr. Burchmore contended.

"The National Industrial Traffic League submits," he said, "that when the Labor Board fixes wages by an order entered otherwise than after a public hearing, at which competent testimony is offered under oath, and the scope of the hearing is confined to matters material to the controversy, it infringes upon the right of the public to receive an intelligent, unbiased and correct expression from the board as to the merits of the controversy."

Witnesses appearing before the board are not put under oath, nor is their testimony limited in any way, Mr. Burchmore pointed out. The relevancy or competency of much of the testimony has not been judged according to the ordinary standards as commonly applied by the Interstate Commerce Commission, boards of arbitration and judicial or quasi-judicial tribunals, he said. This failure is "prejudicial to the paramount right of the public as the silent third party in interest to every dispute before the Labor Board," he added.

"The National Industrial Traffic League does not suggest that the board should adopt the technical rules of evidence and practice applied in courts of law, but suggests that it should conform its practice to that commonly employed by state and federal bureaus and commissions, namely, to require all testimony to be given under the sanctity of the oath, and with reasonable formality to exclude matter clearly incompetent, irrelevant or immaterial."

N. I. T. League Favors Varying Wage Scales

In outlining the position of the National Industrial Traffic League on the question of wages, Mr. Burchmore said:

"It is the view of the league and of the shippers on whose

behalf it appears, that the railroads should not be required by any order of the Labor Board to pay or to continue paying a higher scale of wages to that general class of labor which is used alike in railroad and commercial industry than is paid currently in commercial industry for such comparative employment, and that the wages for such classes of labor vary so widely in different parts of the country and in different towns and cities that they do not lend themselves to uniform treatment.

"We do not contend that all railroad employees are receiving wages that are greater than paid by industries in the same section for comparable employment. Indeed, as against a considerable degree of uniformity in the wages of men employed by particular railroads, there is no such uniformity in the wages paid by industries along the lines of those railroads.

"It is a matter of common public knowledge that railroad labor in many instances has become a preferred class, receiving wages out of harmony to those paid to comparative employment in commercial industries, and this is neither right nor in the public interest."

"Hands Off" Policy Urged

In defending the right of the public to be heard in connection with wage disputes, Mr. Burchmore said:

"The public has a large interest in the outcome of any dispute involving the wages of railroad employees because of the effect thereof upon operating expenses, upon freight rates, passenger fares and transportation charges of the carriers, and finally upon industry throughout the nation. The public interest ought to be heard and considered by the board. The National Industrial Traffic League may fairly claim to speak for a substantial portion of the shipping public.

"As a result of orders entered by the director general during federal control, and former decisions of the railroad labor board," Mr. Burchmore said in discussing the present wage controversy, "the wages of many classes of railway employees have been so 'frozen' that a carrier which is unable in the opinion of its management to continue paying those wages or finds them higher than that class of labor commonly commands in that particular section could not effect a reduction, and could make no progress with its own men toward an agreement upon a reduction in wages. The practical result of this situation is that there has been no real opportunity for the management of the railroads to regulate the wages of their own men, and for those who desired to avoid any readjustment of the war-time wages such as already has occurred in industries, it has been simple to stand pat.

"In order to restore some semblance of freedom of action to the parties, it is necessary that the government take its hands off this situation. In other words, the so-called disputes now pending before the Railroad Labor Board are not bona fide disputes of the character which Congress intended should be the basis for the action of that board. It will not remedy any situation now existing for this board to enter wages to be accepted by the carriers and the men for use throughout the country or on the lines of most of the principal either a blanket order or an elaborate detailed schedule, fix-carriers."

The employees' protest was summarized by them as follows:

No person other than carriers and employees should be permitted

to intervene in disputes before the Railroad Labor Board because:

First. Intervention is the act of proceeding by which one on his own motion becomes a party to a suit pending between others.

Second. To intervene a person must be competent to be a party.

Third. To be competent to intervene as a party a person must have a remedial interest.

Fourth. Generally the right to intervene is purely statutory.

Fifth. The Transportation Act specifically limits those entitled to a hearing to parties to the dispute. (Section 309.)

Sixth. The disputes over which the board has jurisdiction are limited to disputes between carriers and employees and it is only of such disputes that the board has jurisdiction. In these disputes no other persons can be parties.

The organizations seeking to intervene cannot be given standing as witnesses, because witnesses must be individuals capable of being sworn.

The individual representatives of the organizations seeking to intervene cannot appear as witnesses in their own behalf because they cannot be made parties.

Therefore if such individuals are heard they must be called as witnesses by either:

(a) The carrier; or (b) The employees; or (c) The board.

The order of the board apparently permitting organizations to present witnesses is therefore improper and invalid and violative of the rights of the employees as parties to the proceedings before the board because:

First. The organizations are not parties and can not present witnesses.

Second. The individuals to be heard have not been called by any of the parties or by the board.

Third. The hearing of evidence to affect the rights of parties to a proceeding, volunteered by individuals having no standing in the proceeding, is contrary to such established orderly procedure as constitutes "due process of law" and in deprivation of the rights of the parties to the proceeding to a "hearing" such as authorized by statute.

The "hearing" which the board proposes to conduct is:

First. Outside the statutory powers of the board; and therefore an unlawful proceeding.

Second. If such a "hearing" affects in any way the rights of a party it will operate to invalidate as to such a party any decision of the board based in whole or in part upon such a hearing.

If it is the meaning of the board's ruling that evidence may be filed without a hearing, such evidence would be wholly inadmissible and the receiving of it by the board a violation of its obligations as an arbitrating body.

The board should not summon as its witnesses representatives of organizations not parties to the proceeding because:

1. Such organizations represent private partisan interests and are in no sense representatives of the public.

2. If the board permits one organization to be heard representing private or special interests there will be no reasonable basis for excluding any organization and the board will be required to hold extensive hearings of little value affording every organization, which desires to advance a special interest, or some general program of political or social reform, opportunity to be heard, thus imposing an unfair burden of time and expense on the parties and the board.

The purpose of referring disputes to the board is largely to crystallize and define issues between carriers and employees and to obtain an impartial judgment upon those issues. To clutter up the record with a mass of other issues and evidence will defeat the main purpose for which the board was created.

Statistics under partisan handling are notoriously unreliable and it is equally notorious that expert opinion follows a fee. Statistical information and expert opinion, if brought into the record by action of the board, should proceed from official representatives of the public and not from partisans masquerading as members of the public.

The Transportation Act specifically provides that officers and employees of the United States shall supply the board with any data or information necessary, and this specific provision for the production of evidence from representatives of the public excludes by implication the propriety of seeking information from private organizations whose claims to represent public opinion have no popular sanction.

The partisanship of the witnesses offered is obvious from the names of the organizations which they represent. The parties who desire their testimony should be compelled to accept responsibility for its production.

The value of the board as a government instrumentality depends upon its acting with strict propriety within the accepted limitations upon the activities of an arbitrator.

B. M. Jewell Assails Labor Board

Following the withdrawal of the labor men from the board's session, B. M. Jewell, president of the Railway

Employees Department of the American Federation of Labor, issued a statement which said in part:

The refusal of labor organizations to continue in the hearing before the board was a protest against a long continued procedure by which the board has gradually deprived the employees of their right to have wages fixed as "just and reasonable" compensation, in accordance with the law and natural justice.

About a year ago the board violated an unbroken line of precedence of courts and arbitrators and allowed testimony of the ability of a railroad to pay wages to affect the fixing of a fair wage. Today the board went a step further in receiving testimony of the financial ability of the customers (shippers) of a railroad to pay.

Congress established the labor board to fix "just and reasonable" wages. The board has no authority to listen to evidence and to make its decisions on evidence which has nothing to do with what are "just and reasonable" wages.

The decisions of the board, if based on such evidence, will have little value, and hearings are merely a waste of time and money of the carriers and their employees.

Board Assumes Jurisdiction in Katy Dispute

Acting under the provisions of Section 307 of the Transportation Act, giving the board authority to assume jurisdiction over disputes that seem likely to interrupt commerce, the board, on April 27, dispatched the following telegram to the officers of the Missouri, Kansas & Texas and the representatives of the shop craft organizations on that road:

Credible information having come to the board that a dispute exists between the M. K. and T. and its shop craft employees, growing out of the alleged contracting by said carrier of its work in certain shops, the discharge of a large number of its employees and the placing of certain of its shop work on a piece-work basis, which action of the carrier, the employees contend is a violation of the law and the decisions of the board, but which the carrier contends is legal and not in violation of the rights of employees; and it appearing to the board that said dispute is likely substantially to interrupt commerce, and it further appearing that disputes involving this same question are now pending before the board and will be decided at an early date, the board, therefore, assumes jurisdiction of said dispute and sets same for hearing May 4, at 10 a. m. This action must not be construed as indicative of the board's position on the merits of this or similar controversies now pending before it. The parties will maintain the status quo, as of the date prior to the alleged contract, until the dispute is passed upon the board.

The action of the board in assuming jurisdiction over this dispute, is especially significant because of the recent announcement of the shop crafts that it would take a strike vote primarily because of the action of the carriers in contracting certain portions of their operations. The labor leaders have already charged that this contracting is merely an attempt to evade the board's ruling as to wages and working conditions, but because of the absence of one member of the board and the importance of the question, the board has not ruled on this subject.

Reports from Sedalia, Mo., where the Katy shops had been "farmed out" to the A. S. Hecker Company of Cleveland, O., indicate that these shops have again been closed awaiting the board's ruling.

B. W. Hooper Elected Chairman of the Labor Board

Ben W. Hooper, a member of the public group on the board, and vice-chairman of that body, was unanimously elected as chairman on April 27, to succeed Judge R. M. Barton, who has held that position since the board was created. Mr. Hooper's name was placed in nomination by Judge Barton. G. W. W. Hanger, also a member of the public group on the board, was elected to succeed Mr. Hooper as vice-chairman.

Prior to his appointment as a member of the labor board, Mr. Hooper served one term in the Tennessee House of Representatives and in 1910 was elected governor of Tennessee on a fusion ticket. He served two terms, devoting most of his time to problems of prison reform and the enforcement of state prohibition laws. He was subsequently defeated for a third term and was given an honorary nomination for election to the United States Senate in 1916, but

was defeated. At the time of his appointment to the board, Mr. Hooper was practising law at Newport, Tenn.

Following his appointment as chairman, Mr. Hooper indicated that the Labor Board would immediately enter into two fights, one to repulse assaults upon its authority as a federal arbitration party and the other to forestall the threatened strike of shop craft employees announced in last week's *Railway Age*. He intimated that the legal battle between the Pennsylvania and the labor board over the authority of that body to prescribe the manner in which representatives of the men should be elected, would be a "finish fight." Later Chairman Hooper and Judge Barton conferred with Attorney General Daugherty and Solicitor General J. M. Beck at Washington, in regard to the next step in this legal controversy.

As a further sequel to this controversy, Judge C. B. Heiserman, general counsel of the Pennsylvania, speaking before the Academy of Political Science at New York on April 28, said that the Pennsylvania is willing at all times to abide by the decisions of the board "when its decisions are legal."

Testimony of J. H. Libby, Representing National Industrial Conference Board

J. H. Libby, representing the National Industrial Conference Board presented a series of charts to the board dealing with the actual earnings of railway employees, both hourly and weekly, their wages in relation to the cost of living and a comparison of railroad wages with the wages of employees performing the same or similar service in manufacturing industries. The first chart presented by Mr. Libby showed that between 1914 and the middle of the summer of 1920, the total payroll increased 271 per cent, the total operating expenses 237 per cent, the total operating revenues 251 per cent, the number of men employed 58 per cent and the number of men hours worked 41 per cent.

"After the business depression set in in 1920," Mr. Libby said, "and the wage decrease had been made by the labor board on July 1, 1921, the total payroll showed a net gain of 151 per cent over 1914, total operating expenses 136 per cent and total operating revenues 124 per cent, while the total number of men employed showed an increase of 26 per cent and the total number of men hours worked showed a net gain of only 10 per cent over the number in 1914."

Several other charts dealing with the "real" earnings of railway employees, defined by Mr. Libby as "the index of a man's wages divided by the index of the cost of living

representing his purchasing power over any given period. . . ."

"On account of the rise in the cost of living," he said, "the 'real' earnings of all railroad wage earners fell below the 1914 level, until nearly the end of 1917. Then the increases that were awarded under the Adamson law and by the Director General of Railroads brought those earnings up, but in 1919 and in the early part of 1920, the 'real' earnings did not pay for the changes in the cost of living. Finally as the cost of living dropped after the middle of 1920, the 'real' earnings, based on the average hourly earnings, amounted to 144 per cent of the 1914 level, and the 'real' earnings, based on the average weekly wage, 120 per cent. That is a net gain of 20 per cent in the 'real' weekly earnings over 1914."

Mr. Libby also showed that the "real" earnings of skilled shop labor increased 63 per cent based on the average hourly earnings and 24 per cent based on the average weekly earnings adding that "the average employee at the end of the week January 1, 1921, was 24 per cent better off in purchasing power than he had been in 1914."

Similar testimony was introduced showing that the real earnings of machinists, boilermakers and blacksmiths had increased 25 per cent on the basis of their average hourly earnings and 9 per cent on the basis of their average weekly earnings.

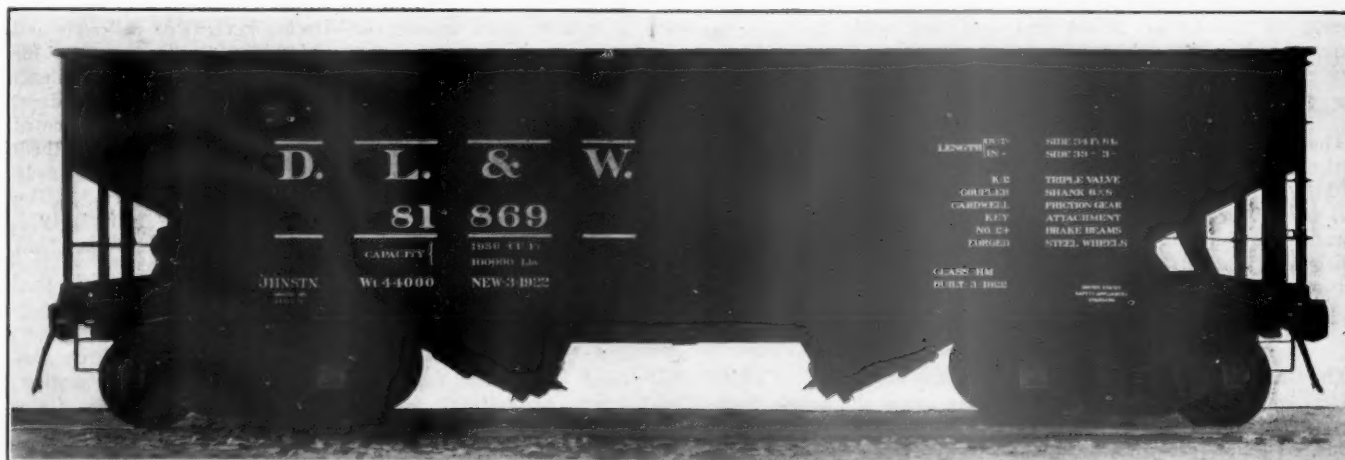
For car men, the "real" earnings were increased 76 per cent computed on their hourly earnings and 34 per cent computed on their weekly earnings.

The "real" earnings of unskilled labor, based on their average hourly earnings, show an increase of 46 per cent, and, based on the average weekly earnings, an increase of 17 per cent over 1914.

For clerks, the increase in "real" earnings based on the average hourly earnings showed an increase of 30 per cent and, based on the average weekly earnings, of 16 per cent over 1914.

For telegraphers, the increase in "real" wages was 41 per cent over 1914 based on the average hourly earnings and 35 per cent based on the average weekly earnings.

Mr. Libby also presented the results of an investigation covering 24 manufacturing industries employing approximately 700,000 men and showing that "until the middle of 1921, unskilled labor in the manufacturing industries was paid at a rate uniformly higher than paid railroad unskilled labor," but that in June, 1921, this situation was reversed, the unskilled labor in the manufacturing industries receiving average hourly earnings of but 38.3 cents while the unskilled labor in railroad service was receiving 44.8 cents.



New Hopper Cars for D. L. & W.

The 1,500 hopper bottom coal cars ordered by the Delaware, Lackawanna Western in 1921 are being delivered. Order was equally divided between Cambria Steel Co., American Car & Foundry Co., and Standard Steel Car Co. These cars are of 100,000 lb. or 1,950 cu. ft. capacity; weight 44,000 lb.; are 33 ft. 3 in. long inside, and are equipped with forged steel wheels.

General News Department

The Western Railway Club will hold its annual meeting and dinner at the Drake hotel, Chicago, on the evening of May 15. United States Senator McKinley of Illinois and James C. Davis, director general of the United States Railroad Administration, will be the speakers.

The Illinois Central has furnished its employees in Mississippi with cards containing a statement of the road's annual operating costs in that state. The number of employees in the state is 9,424 and the amount paid out yearly in wages is given as \$13,645,052. Material and supplies purchased and taxes paid amounted to \$3,003,572. This statement will be, in the words of a prominent railroad president, a "talking point," for employees who come in contact with the public.

The Southern Railway System's new double track bridge across the Ohio river at Cincinnati designed to carry the heaviest locomotives and cars now in use was opened on May 1 for movement of heavy freight traffic. The restrictions as to the weight of cars which have been in effect during construction and previously have been modified so that the Southern can now handle into or out of Cincinnati any car moving in the course of normal business. This will greatly facilitate the movement of heavy loading freight through the Cincinnati gateway. The new bridge is 4,300 ft. long, consisting of 1,600 ft. of truss work, 1,600 ft. of plate girder work and 1,100 ft. of fill between concrete retaining walls. A draw span of the vertical lift type 365 ft. long with a clearance of 53 ft. above high water mark for river navigation, takes the place of an old fashioned swing span of the old bridge.

Another Brotherhood

The Union of Skilled Railway Maintenance of Way Employees has been organized at Macon, Ga., men of that class being present, it is said, from every important railroad in the southern states. J. O. Raley of Macon was elected president and E. N. Hutt of Enterprise, Miss., secretary. It is said that it is the purpose of this union to take in all employees of the maintenance of way department above common laborer.

Pennsylvania-Labor Board Case to be Appealed to Supreme Court

Attorney General Daugherty has announced that the Department of Justice will support the position of the Railroad Labor Board in an appeal from the decision of Judge Page adverse to the board in the Pennsylvania case. Chairman Hooper and R. M. Barton of the Labor Board had conferred with the attorney general on May 1 on the subject.

New England Railroad Club Meeting

The New England Railroad Club will meet on Tuesday, May 9, at the Copley Plaza Hotel, Boston. Dinner will be served at 6:30 P. M. E. S. Jones, official photographer of the Boston & Maine, will deliver the address of the evening on "Maine, the Sportsman's Paradise." The lecture will be illustrated by colored lantern slides which Mr. Jones has been collecting for years. In addition to the lecture there will be an entertainment during the dinner.

Automobiles Must Stop

The General Assembly of Virginia has passed a law under which drivers of automobiles and other vehicles using the public highways must come to a full stop before crossing a railway track at grade. The law provides that drivers of all vehicles on approaching any grade crossing of a main line railway track outside an incorporated town must stop at a point not less than 10 ft. nor more than 100 ft. from the nearest rail; penalty for violation, ten dollars.

To Investigate Pacific Great Eastern

John G. Sullivan, formerly chief engineer of the Canadian Pacific, has been retained by the Province of British Columbia to investigate and report on the Pacific Great Eastern, which is owned and operated by that province, and which has for some time, been showing a deficit. He will advise the government as to the best methods of maintaining the line already constructed, and also recommend the route for the continuation of the railroad to Prince George. W. P. Hinton, formerly general manager of the Grand Trunk Pacific, is preparing a report on the operating and traffic conditions of this carrier.

Annual Meeting of Safety Section

The second annual meeting of the Safety Section of the American Railway Association was held in Chicago this week, Wednesday, Thursday and Friday, with an attendance of about 125.

Final steps were taken to launch the "Careful Crossing Campaign" which is to be conducted this summer for four months throughout the country. Among other subjects discussed were: goggles; the posting of accident and injury bulletins; control of injuries resulting from riding on locomotive footboards; injuries from motor cars; responsibility of supervisors for injuries sustained by their men.

A further report of the doings of this meeting will be given in a subsequent issue.

The International Locomotive Association

The International Locomotive Association is now being promoted, having for its object the study of the history and development of the locomotive; and the preservation of records pertaining thereto. In carrying out these aims the co-operation of all interested will be welcomed.

Information in regard to the activities of the association will be made available to the members through the agency of a bulletin, in which articles of a suitable nature will also appear.

The Organization Committee consists of Arthur Curran, 16 Ballard street, Newton Center, Mass.; Charles B. Chaney, 97 Lafayette avenue, Brooklyn, N. Y., and Norman Thompson, 340 Spence street, Winnipeg, Manitoba.

Signalmen of U. P. Sue for Back Pay

Alleging that approximately \$300,000 is due them as wages earned during federal control of the railroads, January, 1918, to February, 1920, signalmen on the Union Pacific System have filed suit in federal court against the director general of railroads and the Union Pacific for the recovery of this sum. The attorney for the Brotherhood of Railway Signalmen states that his clients were awarded 68 cents an hour for the first 16 months of federal control of the railroads and 72 cents an hour for the balance of federal control, but that the maximum amount paid to them during federal control was 58 cents an hour for the first 16 months and 62 cents an hour for the remaining period. The plaintiffs also allege that the director general on April 7, 1922, ordered the Union Pacific to pay their claims for back pay, but that the road refused to do so.

Development Association at Denver, May 10

The fourteenth annual meeting of the American Railway Development Association, representing the industrial, immigration, real estate, agricultural, publicity and marketing agencies of the railroads will be held in the Brown Palace Hotel, Denver, Colo., on May 10, 11 and 12. The officers of this association are: President, G. E. Bates, assistant to the general manager of the Delaware & Hudson; vice-president, J. B. Lamson, agricultural development agent of the Chicago, Burlington & Quincy; second vice-president, J. F. Fox, traveling immigration agent of the

Northern Pacific, and secretary and treasurer, J. F. Jackson, agricultural agent of the Central of Georgia. A large attendance is expected. Arrangements have been made for addresses by J. H. Young, president of the Denver & Rio Grande Western; Oliver H. Shoup, governor of Colorado, and H. R. Safford, vice-president of the Chicago, Burlington & Quincy.

Refrigerator Cars to Be Discussed by American Society of Mechanical Engineers

A joint meeting on the subject of refrigerator cars will be held by the Railroad Division and the Metropolitan Section of the American Society of Mechanical Engineers with the American Society of Refrigerating Engineers in the Engineering Societies' Building, 29 West Thirty-ninth street, on the evening of May 16. Two papers will be presented; the first entitled, Some Notes on Railroad Refrigerator Cars, by W. H. Winterrowd, chief mechanical engineer of the Canadian Pacific; the second entitled, Mechanical Refrigeration Processes Applicable to Railway Cars, by W. H. Baxter of the Balsa Wood Company, Chicago. The data at present available regarding refrigerator cars is fragmentary and scattered. Mr. Winterrowd's paper brings together facts of interest, and importance to car designers, manufacturers and users. It contains a discussion of numerous factors affecting efficient refrigeration, including air circulation, method of loading, ice containers, insulation, car construction and maintenance. Tabular comparisons of numerous designs of refrigerator cars are included and methods of calculating heat transmission and relative values of insulation are given.

Net Return for March 5.83 Per Cent

The net railway operating income of the Class I railroads for the month of March was at the annual rate of 5.83 per cent on their valuation, according to a preliminary compilation of the returns made by the Bureau of Railway Economics. This is the largest percentage of return earned by the railroads in any single month since the passage of the transportation act. It reflects not only an improvement in general traffic conditions and reductions in expense, but particularly the increase in coal handled during the month of March for storage in anticipation of the coal strike in April, which will correspondingly reduce the earnings for April. The effect of the coal movement is particularly shown in the Eastern district, where the roads earned at the rate of 7.8 per cent. The net operating income for the Class I roads for the month was \$83,510,888 as compared with \$30,807,066 in March last year. For the three months of 1922 the net operating income was \$160,998,907 as compared with \$27,574,407 last year. For the three months the rate of return on an annual basis was 4.51. For the month operating revenues increased 3.4 per cent, in spite of an increase in traffic, but operating expenses were reduced 9.8 per cent. For the three months there was a decrease in revenues of 4.8 per cent, while expenses were reduced 16.6 per cent. The compilation is as follows:

	March			Three Months		
	1922	1921	Per cent of increase	1922	1921	Per cent of increase
Total Operating Revenues:						
Eastern District (incl. Poca. Reg.)	\$242,565,480	\$220,257,772	10.1	\$643,533,691	\$646,545,534	d 0.5
Southern District (excl. Poca. Reg.)	62,009,728	60,484,458	2.5	166,878,389	176,944,917	d 5.7
Western District	170,094,420	178,306,097	d 4.6	461,119,303	512,839,368	d 10.1
Total—United States	474,669,628	459,048,327	3.4	1,271,531,383	1,336,329,819	d 4.8
Total Maintenance Expenses:						
Eastern District (incl. Poca. Reg.)	80,858,621	82,658,709	d 2.2	220,063,279	254,920,366	d 13.7
Southern District (excl. Poca. Reg.)	20,716,840	22,492,737	d 7.9	57,154,949	67,236,739	d 15.0
Western District	57,797,276	64,201,138	d 10.0	162,938,363	193,566,845	d 15.8
Total—United States	159,372,737	169,352,584	d 5.9	440,156,591	515,723,950	d 14.7
Total Operating Expenses:						
Eastern District (incl. Poca. Reg.)	181,212,909	196,193,978	d 7.6	508,954,382	608,381,664	d 16.3
Southern District (excl. Poca. Reg.)	47,137,912	53,203,622	d 11.4	133,107,669	160,964,267	d 17.3
Western District	132,577,622	150,713,589	d 12.6	380,856,485	457,599,375	d 16.8
Total—United States	360,928,443	400,111,189	d 9.8	1,022,918,536	1,226,945,306	d 16.6
Net Railway Operating Income:						
Eastern District (incl. Poca. Reg.)	47,863,471	11,827,161	....	96,669,107	4,271,777	....
Southern District (excl. Poca. Reg.)	11,093,394	4,016,643	....	22,797,965	6,361,245	....
Western District	24,554,023	14,963,262	....	41,531,835	16,941,385	....
Total—United States	83,510,888	30,807,066	....	160,998,907	27,574,407	....
Rate Earned—Annual Basis:						
Eastern District (incl. Poca. Reg.)	7.80	1.93	....	6.44	0.28	....
Southern District (excl. Poca. Reg.)	4.99	1.81	....	4.03	1.13	....
Western District	4.12	2.51	....	2.76	1.12	....
Total—United States	5.83	2.15	....	4.51	0.77	....

d Denotes decrease.

Fuel Association Convention Program

The International Railway Fuel Association has announced details of the program for the sessions at the annual convention to be held in the Auditorium Hotel, Chicago, May 22-25. A comprehensive list of papers and addresses has been prepared and it is expected that there will be a large attendance of railroad men from all departments concerned with the economical purchase and use of fuel. Several subjects of joint interest to railroad officers and coal operators will be considered on the last two days of the convention and it is anticipated that there will be a good representation from the coal operators, especially since the annual meeting of the National Coal Association will be held at the Congress Hotel, Chicago, May 24-26. The complete program is as follows:

Monday, May 22—10:30 a. m.

Invocation L. W. Baldwin, vice-president, Illinois Central.
Opening Address W. L. Robinson, superintendent fuel and locomotive performance, Baltimore & Ohio.
Address by President J. G. Crawford, fuel engineer, Chicago, Burlington & Quincy.
Report of secretary-treasurer Linton W. Bates, Mt. Lebanon, N. Y.
Appointment of committees, unfinished and new business
Colloidal Fuel E. E. Chapman, chairman, engineer tests, Atchison, Topeka & Santa Fe.
Report of Special Committee on Locomotive Feedwater Heating M. A. Daly, chairman, general fuel supervisor, Northern Pacific.
Report of Standing Committee on Firing Practice S. U. Hooper, superintendent, Baltimore & Ohio.

Monday, May 22—2:00 p. m.

Lignite Carbonization Dr. E. J. Babcock, dean, Mining Engineering Department, University of North Dakota
Fuel Conservation from the Standpoint of a Division Superintendent W. S. Burnett, district engineer, Cleveland, Cincinnati, Chicago & St. Louis.
Fuel Conservation from the Standpoint of Representatives of Department Operating Coaling Stations C. J. Barnett, locomotive engineer, Illinois Central.
Fuel Conservation from the Standpoint of Locomotive Engineer J. E. Davenport, engineer dynamometer tests, New York Central.
Effect of Tonnage Rating and Speed on Fuel Economy
The Economic Considerations Governing the Use of Oil as a Locomotive Fuel M. C. M. Hatch, mechanical engineer, Missouri, Kansas & Texas.
Locomotive Fuel the Life Blood of Transportation G. M. Basford, consulting engineer, Lima Locomotive Works.
Incentives for Promoting Fuel Economy—A survey of existing and proposed practices O. S. Beyer, Jr., consulting engineer, New York.
Report of Standing Committee on Front Ends, Grates and Ash Pans E. C. Schmidt, chairman, professor of railway engineering, University of Illinois.
Report of Standing Committee on Fuel Accounting J. N. Clark, chairman, chief Fuel Bureau, Southern Pacific Lines.
Educational Work Along Fuel Economy Lines D. C. Buell, director, Railway Educational Bureau.

Tuesday, May 23—9:30 a. m.

Wednesday, May 24—9:30 a. m.

- The Government and the Coal IndustryT. H. Watkins, president, Pennsylvania Coal & Coke Company.
 Effect of Circulation on Locomotive Boiler EfficiencyF. G. Lister, mechanical engineer, El Paso & Southwestern System.
 The Various Items of Saving by Using a Better Quality of CoalEarl Cobb, president, Southwestern Coal Company.
 Assigned Cars for Railroad Fuel ...G. G. Hall, general manager, Walter Bledsoe & Co.

Wednesday, May 24—2:00 p. m.

- Report of Standing Committee on Storage CoalH. H. Stock, chairman, professor mining engineering, University of Illinois.
 Comparative Practice—United States, United Kingdom, France and GermanyHarrington Emerson
 Report of Standing Committee on Fuel StationsW. E. Dunham, chairman, assistant superintendent motive power and maintenance, Chicago & North Western.

Thursday, May 25—9:30 a. m.

- The Relation of Overdevelopment of the Bituminous Coal Industry to TransportationC. E. Leshner, editor, Coal Age.
 Standard Railroad Coal Contract ...W. J. Tapp, fuel supervisor, Denver & Rio Grande.
 The Railroad Fuel Problem from the Standpoint of the Coal OperatorF. S. Peabody, president, Peabody Coal Company.

Thursday, May 25—2:00 p. m.

Business Session

- Report of Auditing Committee
 Report of Committee on Constitution and By-LawsT. Duff Smith, chairman, lake forwarding agent, Canadian National.
 Report of Committee on Thanks, election of officers, balloting for place of 1923 meeting.

Supplement to 1921 Rules of Interchange

A supplement to the 1921 Rules of Interchange has been prepared by the Arbitration Committee and the Committee on Prices for Labor and Materials of the Mechanical Division of the American Railway Association. This supplement includes several interpretations of the Rules of Interchange as rendered by the Arbitration Committee and the following modifications of the rules relative to prices for labor and materials:

Rule 101.—Entirely revised on account of present market prices and labor per hour revised to \$1.10 per hour. Revision effective May 1, 1922.

Rule 107.—Several items revised on account of revision of labor rate, effective May 1, 1922.

Rule 112.—Reproduction cost per pound prices for settlement for cars destroyed reduced 30 per cent, effective May 1, 1922.

Passenger Car Rule 22.—Material allowances revised on account of present market conditions.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, June 19-21, Hadden Hall Hotel, Atlantic City, N. J. Exhibit by Air Brake Appliance Association.
 AIR BRAKE APPLIANCE ASSOCIATION.—J. F. Gettrust, The Ashton Valve Company, 318 W. Washington St., Chicago. Meeting with Air Brake Association.
 AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.
 AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—L. A. Stone, C. & E. I. Ry., Chicago. Annual meeting, Oct. 17-20, San Francisco, Cal.
 AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.
 AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago. Next meeting, June 28 and 29, Minneapolis, Minn.
 AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.
 AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 23-25, 1922, Kansas City, Mo.
 AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York.
 AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borchardt, 202 North Hamlin Ave., Chicago, Ill.
 AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Annual meeting, November, 1922.
 Division I—Operating.
 Freight Station Section (including former activities of American

Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.
 Medical and Surgical Section. J. C. Caviston, 75 Church St., New York.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association), J. C. Caviston, 75 Church St., New York, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y. Annual meeting, September 20-22, 1922, Colorado Springs, Colo.

Safety Section. J. C. Caviston, 75 Church St., New York.

Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Covert, 431 South Dearborn St., Chicago, Ill.

Division III—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section. E. H. Fritch.

Electrical Section. E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association). H. S. Balliet, 75 Church St., New York, N. Y. Next meeting, March 13 and 14, Drake Hotel, Chicago. Annual meeting, June 14-16, 1922, Monmouth Hotel, Spring Lake, N. J.

Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 14-21, 1922, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association). J. P. Murphy, General Store Keeper, New York Central, Collinwood, Ohio. Annual meeting, June 19-21, 1922, Hotel Traymore, Atlantic City, N. J.

Division VII—Freight Claims (including former activities of the Freight Claim Association). Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 17-19, 1922, Cincinnati, Ohio. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, C. of Ga. Ry., Savannah, Ga. Annual meeting, May 10-12, 1922, Denver, Colo.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division V.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C. Annual meeting, May 10, Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eiseman, 1600 Prospect Ave., Cleveland, Ohio. Sectional meeting, May 25-26, Bureau of Mines Auditorium, Pittsburgh, Pa. Annual convention, Oct. 2-7, 1922, General Motors Building, Detroit, Mich.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June 26-30, 1922, Chalfonte-Haddon Hall, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Next meeting, May 8-11, Atlanta, Ga. Railroad Division, A. F. Stuebeling, Managing Editor, Railway Mechanical Engineer, Woolworth Bldg., New York. Next meeting, May 16, 1922, 29 W. 39th St., New York.

AMERICAN TRAIN DISPATCHERS ASSOCIATION.—C. L. Darling, 1310-1311 Mallers Bldg., Chicago, Ill. Next convention, June 18, 1923, Chicago.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—S. D. Cooper, A. T. & S. Fe R. R., Topeka, Kan. Next meeting, January 23, 1923, New Orleans, La.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next meeting, May 17-19, 1922, Montreal.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Room 411, C. & N. W. Sta., Chicago. Next meeting, June 19, Dennis Hotel, Atlantic City, N. J. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—D. J. Higgins, American Valve & Meter Company, 332 S. Michigan Ave., Chicago. Meeting with convention of American Railway Bridge and Building Ass'n.

CANADIAN RAILWAY CLUB.—W. A. Booth, 53 Rushbrook St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, Mo.—Thomas B. Koeneke, 604 Federal Reserve Bank Bldg., St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2d Thursday in January, March, May, September and November, Hotel Iroquois, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesan Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILROAD CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2d Tuesday in February, May, September and November.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C. Annual meeting May 11, 1922, Railroad Club of New York.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—C. H. Treichel, Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 1414, Manhattan Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual convention, August 15-17, Hotel Sherman, Chicago. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting May 22-25, 1922, Auditorium Hotel, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—C. W. Sullivan, Garlock Packing Co., 326 W. Madison St., Chicago. Meeting with International Railway Fuel Association.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Annual convention, 1922, Buffalo, N. Y.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next convention, May 23-26, 1922, Hotel Sherman, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—Warren C. Nixon, Western Tie & Timber Co., 905 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, September 26, 1922, Detroit, Mich.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Next convention, May 10-12, Philadelphia, Pa.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition at convention of American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual meeting, June 7, 1922, Hotel Cleveland, Cleveland, Ohio.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa. Annual dinner, February 1, Waldorf-Astoria, New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va. Next meeting October 10-13, 1922, Pittsburgh, Pa.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV., Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with A. R. A., Division V.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Annual convention, September 19-21, 1922, Hotel Statler, Cleveland, Ohio. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS ASSOCIATION.—W. O. Thompson, Marine Trust Building, Buffalo, N. Y. Annual convention, September 12-15, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Annual dinner, May 15, Drake Hotel, Chicago. Regular meetings, 3d Monday each month except June, July and August.

Traffic News

The Transportation Club of Louisville, Ky., has moved its club-rooms to 630 South Fourth street in that city.

The Gulf, Mobile & Northern has inaugurated a new through freight service between Jackson, Tenn., Mobile, Ala., and New Orleans, La.

The House committee on interstate and foreign commerce has postponed consideration of the mileage book bills, on which it recently held hearings, for an indefinite period.

The Northern Pacific, to accommodate travelers to the Yellowstone National Park, will establish new sleeping car service on June 19, between St. Paul and Gardiner, Mont., on its Pacific Express, trains 3 and 4.

The Chicago & Alton has announced the inauguration of a new solid Pullman no-stop passenger train between Chicago and St. Louis, Mo. A feature of this train is a sleeper exclusively for men and another for women only.

The Illinois Central has announced the opening of a freight and passenger traffic office at 2946 East Ninety-second street, Chicago, to serve South Chicago, Calumet and Gary, including also East Chicago, Hammond, Hegewisch, Indiana Harbor and Whiting. This is said to be the first city freight and passenger office to be opened by any railroad in the "South Chicago" business district.

The concrete fireproof grain elevator of the Pennsylvania Railroad at Baltimore, Md., is to be enlarged this summer to a total capacity of 4,250,000 bushels. The work remaining to be done consists of the construction of bins to add 1,300,000 bushels to the present storage capacity. This portion of the construction was unavoidably suspended during the war. The old wooden Elevator No. 1 is to be torn down. When finished the new elevator will represent a total investment of \$5,500,000. The plant is electrically operated throughout. The elevator has accommodation for loading four of the largest ships simultaneously. It has four mechanical unloading machines which empty the grain from box cars by turning them on their sides and rocking them from end to end. The unloading capacity of the four machines, operating together, is 40 cars an hour. The elevator's working capacity for loading grain into ships exceeds 120,000 bushels an hour.

Coal Production Increases

In the fourth week of the coal strike (April 24-29) production has turned upward, according to the weekly bulletin of the Geological Survey. The output of bituminous coal is expected to pass the 4,000,000-ton mark. Production of anthracite, however, remains practically zero.

The revised figures for the third week (April 17-22) are 3,560,000 tons of soft coal and 6,000 tons of anthracite, a total for all coal of 3,566,000 net tons. The same week of the 1919 strike saw 5,344,000 tons of bituminous and 2,055,000 tons of anthracite produced, a total of 7,399,000 tons. The current output of hard and soft coal combined is therefore some 3,800,000 tons short of that in the corresponding period of the 1919 strike.

Telegraphic reports indicate a definite increase in production of soft coal during the week of April 24-29. Loadings on Monday, April 24, were 12,131 cars. This was the highest since the strike began, yet it was exceeded on Tuesday and again on Wednesday, when 12,520 cars were loaded.

The increase of last week has come largely from the non-union districts of the Middle and Southern Appalachians, the bulletin says. It is not due to the return to work of striking miners, either union or non-union, but rather to increased demand resulting in greater activity in those districts which have remained at work.

The quickening of the market has not yet absorbed the accumulation of unbilled cars, but the number of these unconsigned loads is steadily decreasing. Consumption is still being met largely from storage.

There is no change in the anthracite situation.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until August 31 the operation of schedules published by the Denver & Salt Lake, which propose increases in rates of 13½ cents a ton on soft coal from Curtis Mine, Colo., to points in Colorado, Iowa, Kansas, Missouri, Nebraska, South Dakota and Wyoming.

The commission has suspended from May 1 until August 29 the operation of certain schedules which propose a reduction from 10 cents to 7 cents per 100 lb. in the rate on cement from cement producing points in Pennsylvania and New Jersey to New Jersey tidewater terminals, applicable on shipments destined beyond by water to points in the lighterage limits of New York Harbor.

The commission has suspended, until August 29, the operation of certain schedules which propose increases in rates on lumber from producing points in California to destinations in Minnesota and Wisconsin. The present rate from the so-called Coast Group is 66½ cents, and from the Truckee and Hawley Groups, 62½ cents per 100 lb., and it is proposed to establish a rate of 73 cents from the Coast Group and 70 cents from the Truckee and Hawley Groups.

The commission has suspended until August 30 the operation of schedules published in supplements to Agent F. A. Leland's tariff which propose new rates on petroleum from Cushing, Muskogee and Vinita, Okla., to destinations in Kansas. There are at present no through rates between the points involved, except in a few cases, and it appears that the proposed rates are being established partly in anticipation of the proposed cancellation of the rules for constructing combination rates from the tariffs of individual carriers and partly because this rule has already been cancelled from some tariffs, which tariffs are used in figuring the factors used in constructing combinations as a basis for through rates.

The commission has issued a decision finding the Brimstone Railroad & Canal Company to be a common carrier of property subject to the Interstate Commerce act and that it may lawfully participate in joint rates with other common carriers or have its charges on interstate shipments absorbed under appropriate tariff provisions. The divisions received by the company are found to be unjust, and, to the extent that they exceed the cost of the service and a fair return upon the property, to be excessive and in fact a rebate to the Union Sulphur Company. The respondents are required to make a study of the cost of the service performed by this railroad, after which the case will be set for further hearing.

Court News

Excessive Demand Will Bar Recovery of Double Damages

The Iowa Supreme Court holds that a railroad's right to resist payment of double damages, under Code sec. 2055, for killing cows, is not conditioned on its ability to show bad faith in the plaintiff. It is enough if the demand made is clearly excessive.—*Lister v. Chicago, M. & St. Paul (Iowa)*, 186 N. W. 8.

I. C. C., Approving Issuance of New Securities, Need Not Pass Upon Reorganization Plan

The Federal District Court for the Southern District of New York, dismissing a petition to set aside an order of the Interstate Commerce Commission approving the issuance of new securities by the Chicago & Eastern Illinois, holds that the commission, before making such an order on reorganization, does not pass upon the reorganization plan, but upon the propriety of exchanging new securities for old property; if the property be adequate, it is unnecessary to go into the validity of its acquisition by the railroad company.—*Miller v. United States*, 277 Fed. 95.

Foreign Railway News

Frozen Signals Cause Collision in England

A railroad system of 20,000 miles is pretty sure to have weak spots, howsoever great the skill and faithfulness of the men who work it; and Great Britain, with its unsurpassed record for railroad safety, appears to be no exception. One of the latest government accident reports received from London, signed by Major G. L. Hall, tells of a rear collision in a tunnel, due to two signals being frozen in the proceed position!

It was near Littleborough, a short distance from Rochdale, on the London & North Western on February 6, a passenger train running into a freight which had broken in two. It was at about 5 o'clock on a Monday morning. The passenger train was nearly empty, and no person was killed, though the train was moving at 30 to 40 miles an hour. The signals had been left in the proceed position over Sunday, the block station being closed; and the signalman who came on duty at 4:50 a. m. began operations in disregard of the rule to see that all of his signals were in working condition. He pulled the levers all right, but the blades remained fast in the horizontal position. How he could do this without breaking the wires (or rods) is not explained.

The inspector also passes silently over other features of the case, a thing which was very rare in the days before the war, when the accident investigations were made under the auspices of the Board of Trade. All that we are told about the weather at Littleborough on February 6 is that there was a severe frost. Whether it was snow, or ice or sleet, or mere frozen fog, is left to conjecture. The track foreman came on duty at 3 a. m. and he loosened these signals as soon as he got to them; but not in season to prevent the collision.

Plan for Private Ownership in Germany

The opponents of government ownership of railways in Germany have made a further move towards the denationalizing of the railways by bringing forward a definite plan for their acquisition and reconstruction as a corporation, according to the Times (London).

The new scheme proposes a company, the principal shareholders in which would be associations of agriculture, trade (including banks), industry, trade unions, and communes. The central government is to have the right of inspection and a share in the profits, the right of inspection being limited to seeing that the railways are kept up to the standard of public needs and that the commercial policy of the company is not in opposition to the interests of the government. The railways are then to be reorganized into four departments, each with its own separate accounts.

As the problem of making the railways pay is one which the government has failed to solve, the deciding influence in financial matters is to rest with the leading personages of German industry. It is proposed to divide profits up to 6 per cent among the shareholders, profits in excess of this amount to go one-half to the shareholders and the other half to the government. The initial share capital is to be as small as possible; 5,000,000,000 marks is suggested.

In the difficult question of personnel the scheme proposes that existing contracts between employees and the government shall be engaged on conditions similar to those obtaining in private industrial undertakings. In other words, the privileged position of the servant is to be abolished. Whether he would continue to work at his present low pay when his status has disappeared is not discussed.

Railway Electrification in Holland

LONDON.

The proposal to electrify the Dutch railway system is meeting with considerable opposition, according to the Economic Review (London) and M. J. J. W. van Loenen Martinet, who was a member of the commission appointed in July, 1918, to study the question, lecturing before the Dutch Royal Institute of Engineers, argued against immediate electrification of the system as a whole. In countries possessed of ample water power,

like Switzerland, Sweden and Austria, which moreover suffered severely from a shortage of coal during the war, it was a reasonable proposition, but not in a flat country like Holland, which had no water power.

The coal consumption of the two Dutch railway companies in 1913 amounted to about 800,000 tons. Had the entire system been electrified there would have been a saving of 40 per cent, as against which there would have been the cost of construction and the purchase of rolling stock, also the cost of central power stations and the loss on scrapped locomotives.

Judged by this data the proposition was an absurd one. If a careful selection were made of lines to be electrified, there might possibly be a saving of from 50 to 60 per cent on the coal consumption, but even that would not justify the scheme. Only in Germany and in Switzerland were they carrying out a complete electrification of the railway system on a uniform principle, the one-phase alternating current system. After considering the various systems of the different countries, the Dutch Commission had pronounced against the rotary current system as wholly unsuited to Holland. The main question to be considered was the possibility of obtaining from the central power stations a sufficient constant tension, and the likelihood of the high tension system on the railways admitting of a regular supply of electric current. The commission also contemplated the possibility of a portion of the electric plant eventually being manufactured in Holland, but, to begin with, they would require foreign supervision in the starting of their motor industry.

Comparative Costs of Repairs in New

South Wales and the United States

Comparative statistics have their limitations even when applied only to railroads of this country and railway officers have learned the futility of drawing conclusions from them without complete knowledge of the circumstances. It is doubtful whether any fair comparison of repair costs in New South Wales and the United States can be drawn. Nevertheless the statistics recently given out by A. D. J. Forster, assistant chief mechanical engineer of the New South Wales Government Railways, are of interest. Mr. Forster quoted figures for a leading American railroad company and similar figures for the New South Wales System, as follows:

"In 1910 the total cost of repairing 1,686 locomotives owned by the American company was \$2,831,230; the total cost of repairing the 891 locomotives owned by the New South Wales Railways in that year, expressed in dollars, was \$1,824,830. In 1920, however, the American company owned 1,866, which cost \$17,468,777 to repair, while the total cost of repairing 1,299 locomotives owned by the New South Wales Railways was \$6,115,600.

"Thus the cost of repairing double the number of locomotives in America in 1910 was \$1,000,000 more than was spent in New South Wales while in 1920 the added cost in America was about \$14,500,000, including 180 additional locomotives; whereas in New South Wales we had increased our number by 408 locomotives and the total additional cost of repairs for the year was about \$4,250,000.

"In 1910 the locomotives in New South Wales traveled an average of 21,992 miles each, as against 28,084 miles of service rendered by the American locomotives. In 1920 the American locomotives' average fell to 26,696 miles, whereas the New South Wales locomotives' average increased to 22,022 miles.

"Again, with regard to the repairs, the cost per locomotive mile in America in 1910 was 5.98 cents. In New South Wales, reduced to the same coinage, it was 9.313 cents. By 1920, however, the cost in America had risen from 5.98 cents to 34.38 cents; whereas in New South Wales it had risen from 9.313 cents to 21.727 cents."

Belgian Market for American Railway Ties

If railway tie exporters in the United States can make proper selling connections, they should be able to supply a fairly good portion of the annual consumption of oak ties in Belgium, according to Commerce Reports. Since the armistice oak ties have been difficult to procure, and most of the offers received by the government railways have been from speculators who have not been able to deliver the goods when called upon. At present the railroad administration, before passing a contract, requires a statement from a government official in the country of origin that

a stock of ties actually exists and is in the possession of the party or parties submitting bids.

Under pre-war conditions Belgium consumed from 700,000 to 800,000 ties annually, 100,000 of which were secured in the country. For the next two or three years it is to be expected that the annual consumption of ties will amount to little under 1,000,000, as much tie renewal is becoming necessary on the state railroads. The internal production can not help to balance this increased consumption, as the Belgian forest reserves in oak are limited and have been drawn on to the limit since the armistice. The severest competition will be encountered from France, which now furnishes most of the oak ties imported by Belgium. Poland also ships small quantities to this country. Exact figures are not available on tie imports, as Belgian trade statistics do not consider railway ties separately.

White oak is practically the only kind of railway tie now accepted by the Belgian state railroads, the one exception being German deliveries of beech and pine ties (the latter in very small quantities), in accordance with the Versailles treaty. The annual consumption of ties is limited by Belgian facilities for creosoting. Government and private creosoting installations combined can not handle more than 1,000,000 ties yearly. The state railroads formerly employed oak, beech, southern yellow pine, and jarrah (Australian), but at present only white-oak ties are being accepted. The standard Belgian dimensions for ties are: Half round, 2.60 meters long, 0.28 meter wide, 0.14 meter thick; and squared, 2.60 meters long, 0.26 meter wide, 0.13 to 0.14 meter thick. [A rough sketch showing other dimensions (French standards) which are accepted by the Belgian Railroad Administration may be obtained from the Lumber Division of the Bureau of Foreign and Domestic Commerce, Washington, D. C.]

American exporters can deal directly with the Belgian government, but for large orders, especially when the American exporter wishes to obtain an entire or the greater part of a tender, it is better to go through a Belgian house. The government pays within 30 days after receipt of merchandise. In case of delay after this period, the furnisher can claim interest on the amount of money involved.

Further Consolidations in England

The directors of the London & North Western and Midland Railway companies have, subject to the approval of the stockholders of the two companies, entered into a provisional agreement under which the two companies will be amalgamated as from January 1, 1923, into a new company, the name of which will be subsequently decided upon, according to Modern Transport (London). During the current year, the two companies will continue under separate management, but will work in the closest co-operation with a view to economy, and with the object of facilitating the complete amalgamation as from the date named. The provisional agreement will be carried out by a preliminary scheme of amalgamation as provided in the Railways Act.

The terms on which the several stocks of the two companies will be exchanged for stocks in the new company are as follows:

1. The debenture, guaranteed and preference stocks of the two companies existing at the date of amalgamation shall be converted *pari passu* into similar stocks of the new company, such amount to be issued as will give the stockholders the same income as they receive at present.

2. The preferred ordinary stock of the Midland Company shall be converted into a new preference stock to be known as the 1923 preference stock of the new company, such amount to be issued as will give the holders of the Midland stock the same income as they receive at present.

3. Ordinary stock of the new company to be issued in exchange for the existing Midland preferred ordinary stock at the rate of £68 for each £100 Midland preferred stock.

4. Ordinary stock of the new company to be issued in exchange for the existing London & North Western ordinary stock at the rate of £100 for each £100 London & North Western stock.

It is proposed that the new board shall consist of twelve directors of the London & North Western and eight of the Midland. Meetings of the proprietors and debenture stockholders will be summoned at a later date, when the proposed scheme will be submitted for their approval.

It will be remembered by readers of these columns that the Lancashire & Yorkshire was amalgamated with the L. & N. W. on January 1 of this year.

Equipment and Supplies

Locomotives

THE PEORIA & PEKIN UNION is asking for prices on 6, 6-wheel switching locomotives.

THE MISSOURI & NORTH ARKANSAS will spend approximately \$185,000 for repairs to its locomotives.

THE PATAGONIAN RAILWAY has ordered 25 Mikado type locomotives from the Baldwin Locomotive Works.

THE ATLANTIC COAST LINE, reported in the *Railway Age* of April 22 as inquiring for 20 Pacific type locomotives, has ordered this equipment from the Baldwin Locomotive Works.

THE NORFOLK SOUTHERN, reported in the *Railway Age* of April 15 as contemplating buying 5 locomotives, is asking for bids until 12 o'clock noon, May 10, at Norfolk, Va., for 5 consolidation type locomotives.

THE SOROCABANA RAILWAY (Brazil) has ordered 10 Mikado type locomotives from the American Locomotive Company. These locomotives will have 19 in. by 20 in. cylinders and a total weight in working order of 129,000 lb.

THE MOGYANA RAILWAY (Brazil) has ordered one Pacific type locomotive from the American Locomotive Company. This locomotive will have 17½ in. by 20 in. cylinders and a total weight in working order of 113,000 lb.

THE BOSTON & MAINE has ordered 2 switching locomotives from the American Locomotive Company. This is in addition to the order for 2 Mallet type and 20 switching locomotives reported in the *Railway Age* of April 22.

THE WAYNE COAL COMPANY, Pittsburgh, Pa., has ordered two 4-wheel switching locomotives from the American Locomotive Company. These locomotives will have 11 in. by 16 in. cylinders and a total weight in working order of 43,000 lb.

THE BUFFALO SLAG COMPANY, Buffalo, N. Y., has ordered one 4-wheel switching locomotive from the American Locomotive Company. This locomotive will have 16 in. by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE STANDARD SLAG COMPANY, Youngstown, Ohio, has ordered one 4-wheel switching locomotive from the American Locomotive Company. This locomotive will have 16 in. by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE NEW YORK, NEW HAVEN & HARTFORD, reported in the *Railway Age* of April 22 as having ordered 15, 0-8-0 type locomotives from the American Locomotive Company, has ordered 5 additional 0-8-0 type locomotives from the same company. These locomotives will be used in the joint service of the Central New England and the New Haven.

THE CHICAGO & NORTH WESTERN, reported in the *Railway Age* of April 22 as inquiring for 20 Mikado type locomotives, 20, 6-wheel switching locomotives and 10 Pacific type locomotives, has ordered this equipment from the American Locomotive Company. The Mikado locomotives will have 27 in. by 32 in. cylinders and a total weight in working order of 304,000 lb. The switching locomotives will have 21 in. by 28 in. cylinders and a total weight in working order of 171,000 lb. The Pacific locomotives will have 25 in. by 28 in. cylinders and a total weight in working order of 269,000 lb. All these locomotives will be equipped with superheaters.

Freight Cars

THE SAN ANTONIO SOUTHERN is inquiring for 30 open top cars.

THE MISSOURI PACIFIC is inquiring for 2,000 automobile cars.

THE BELT RAILWAY OF CHICAGO is inquiring for 450 gondola cars.

THE UNITED VERDE COPPER CO., Jerome, Ariz., is inquiring for 24 ore cars.

THE ERIE contemplates having repairs made to a large number of freight cars.

THE ELGIN, JOILET & EASTERN is inquiring for steel reinforcements for 80 gondola cars.

THE PENNSYLVANIA ENGINEERING WORKS, Newcastle, Pa., is inquiring for 8 pairs of arch bar trucks.

THE EMPIRE REFINERIES, INC., have awarded a contract to the North American Car Company for repairs to 600 steel tank cars.

THE MISSOURI & NORTH ARKANSAS will spend \$277,600 on either, or both, new equipment and repairs to the old.

THE NORTHERN PACIFIC will purchase 1,000 box cars, 250 convertible work and coal cars, 250 steel coal cars, and 250 stock cars.

THE ATLANTIC COAST LINE, reported in the *Railway Age* of April 22, as inquiring for 750 single-sheathed box cars, is now inquiring for 700 box cars of 40 tons' capacity.

THE NEW YORK CENTRAL will have 1,000 refrigerator cars of 35 tons' capacity for its own lines and 500 for the Michigan Central built in the shops of the Merchants Despatch at East Rochester, N. Y. Mention was made in the *Railway Age* of April 8 that these cars would be built by the Merchants Despatch.

Passenger Cars

THE NORTHERN PACIFIC will purchase 70 passenger refrigerator cars.

THE MISSOURI & NORTH ARKANSAS will spend \$22,000 on its passenger equipment.

THE FRANKFORT ELEVATED RAILWAY, Philadelphia, Pa., is asking for bids until 12 o'clock noon, May 25, for 50 steel passenger cars.

THE NORFOLK & WESTERN reported in the *Railway Age* of March 11 as inquiring for 7 dining cars, has ordered this equipment from the Pullman Company.

THE ATLANTIC COAST LINE, reported in the *Railway Age* of April 22 as contemplating buying a number of cars for passenger service, is now asking for 20 all-steel express cars 70 ft. long, and 10 all-steel coaches 74 ft. long.

THE INTERBORO RAPID TRANSIT CO. has been directed by the Transit Commission, New York, to buy 350 new subway cars. The order calls for the purchase of 100 cars at once, for 50 cars on Aug. 1, and for 200 cars within 6 months after approval of contracts for necessary storage yard.

THE CHESAPEAKE & OHIO, reported in the *Railway Age* of March 25 as inquiring for 63 cars for passenger service, has ordered 22 undivided coaches, 8 divided coaches, 8 combination passenger and baggage, 5 express with automobile doors and 20 straight express cars, from the Pressed Steel Car Company.

Iron and Steel

THE KANSAS CITY SOUTHERN has ordered 6,000 tons of rail from the Illinois Steel Company.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE has ordered 3,000 tons of rail from the Illinois Steel Company.

THE ST. LOUIS-SAN FRANCISCO has placed an order with the Wisconsin Bridge Company for four deck girder spans totaling 123 tons of structural steel.

THE LEHIGH VALLEY is reported as having ordered about 900 tons of bridge steel from the American Bridge Company; about 800 tons from the Phoenix Bridge Company, and 500 tons from the Bethlehem Steel Bridge Company, for use at various places on its lines.

THE IMPERIAL GOVERNMENT RAILWAYS of Japan, reported in the *Railway Age* of April 29, as inquiring for 10,000 tons of 75-lb. rail and a small quantity of splice bars, has ordered, through Mitsubishi Shoji Kaisha, Ltd., New York City, 10,000 tons of 75-lb. rail and 830 tons of splice bars from the United States Steel Products Company.

Track Specialties

THE CHESAPEAKE & OHIO is reported to have ordered 2,200 tons of tie plates.

THE NORTHERN PACIFIC has ordered 2,400 continuous insulated joints from the Rail Joint Company.

THE CHICAGO & NORTH WESTERN is reported to have ordered 8,000 to 10,000 kegs of bolts and spikes.

THE PERE MARQUETTE has ordered 5,000 "100-per cent" joints from the Rail Joint Company for 85-lb. rails.

THE MICHIGAN CENTRAL has placed an order with the Rail Joint Company for 10,000 "100-per cent" joints for 100-lb. rails.

Machinery and Tools

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for a five-foot radial drill.

THE WESTERN MARYLAND is inquiring for a number of machine tools including lathes and punches.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for a 44-in. vertical boring mill, and a 36-in. lathe.

THE PENNSYLVANIA RAILROAD is inquiring for a number of tools for repair work, including hydraulic riveters.

THE GULF & SHIP ISLAND is reported to have ordered a number of machine tools, including a driving wheel lathe, wheel press, radial drill and a car wheel borer.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for a car wheel lathe, a 6-ft. radial drill, a single-end angle-iron shears, a single-end punch and shear, a 20-ft. plate bending roll, two single-end punches, a double-end punch and shear, a splitting shear, and an angle-iron bending roll.

Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, May 16, for its requirements of steel bars, steel shapes, steel plates and track materials.

THE CHICAGO & NORTH WESTERN will accept bids until May 6, for requirements for the year ending March 31, 1923, of incandescent electric lamps of the following types: carbon filament; tungsten filament-vacuum; tungsten filament-gas filled; and miniature.



On the Wheeling & Lake Erie

Supply Trade News

R. S. Wensley has been elected a vice-president of the G. M. Basford Company, New York.

Daniel M. Brady has removed his office from 95 Liberty street to 90 West street, New York City.

The Allen-Bradley Company, Milwaukee, Wis., has established a branch office in 1318 Chemical building, St. Louis, Mo.

A. H. Hudson has been appointed district manager of the railroad division, Service Motor Truck Company, with eastern headquarters.

The Sharon Pressed Steel Company has removed its office from 66 Broadway to its new warehouse at 47 West Broadway, New York City.

The Chicago-Cleveland Car Roofing Company has moved its general offices from the Railway Exchange building, Chicago, to the Kimball building.

A. G. Shaver, chief engineer of the Regan Safety Devices Company, New York, with headquarters at Chicago, has resigned effective May 1.

Howard Yeomans has been elected president of the Bishop & Babcock Company, Cleveland, Ohio, succeeding E. S. Griffiths, who has resigned, due to ill health. F. R. Pleasanton has been elected vice-president and general manager.

W. T. Tyler, formerly director of the Division of Operation of the Railroad Administration and more recently vice-president of the Northern Pacific, has been appointed director, vice-president and general manager of the National Safety Appliance Company, San Francisco. Mr. Tyler will be located in Chicago with temporary offices in the People's Gas building. A photograph and biographical sketch of Mr. Tyler were published in the *Railway Age* in the issue of February 13, 1920.

The Walsh Tie Company has just completed a new timber treating plant at Gilkey, near Minneapolis, Minn., a description of which appears in this week's *Railway Age*. P. R. Walsh, St. Louis, Mo., is president of this company; J. C. Kirkpatrick, Escanaba, Mich., vice-president; and H. S. Gilkey, Minneapolis, secretary and treasurer. A. Meyer, formerly superintendent of the Chicago, Burlington & Quincy's lumber treating plant at Galesburg, Ill., is superintendent of the tie and post plants, F. G. Moore is assistant superintendent of these plants, and L. A. Furlong is superintendent of the pole treating plant.

E. A. Langenbach was elected president of the Alloy Steel Corporation, Canton, Ohio, at the annual meeting held on April 18, succeeding H. R. Jones, resigned; Mr. Langenbach also being re-elected chairman of the board of directors. John McConnel, who recently returned to the company, and Elton Hoyt, of Pickands, Mather & Co., Cleveland, Ohio, were elected directors, succeeding E. L. Hang and J. A. Buell, while George H. Clark was elected vice-president and general manager, and C. W. Kreig, vice-president, secretary and treasurer, succeeding Mr. Hang as treasurer. Mr. McConnel was elected vice-president in charge of operations at the meeting.

Obituary

William A. Greaves, a retired machine tool manufacturer, Cincinnati, Ohio, died in that city on April 18. He was the organizer of Greaves-Klusman & Co., lathe manufacturers.

William S. Reid, manager of the railroad department of the Minneapolis, Minn., branch of the Dearborn Chemical Company, Chicago, died at St. Barnabas hospital, Minneapolis, on April 25, from the effects of blood poisoning.

Railway Construction

CANADIAN PACIFIC.—This company has obtained appropriations of \$331,000 and \$410,000, respectively, from the province of Alberta to construct a 13-mile extension of the Peace river branch and a 15-mile extension of the Grand Prairie branch of the Edmonton, Dunvegan & British Columbia, a line which it now operates under a five-year agreement with the Province of Alberta. Negotiations are being made at the present time for the proposed extension and it is expected that an agreement will be reached permitting the undertaking of this work in the near future.

CHICAGO & NORTH WESTERN.—This company, which was noted in the *Railway Age* of April 15, and April 22, as receiving bids for the construction of a 450-ton coaling station and ash handling facilities in Chicago, to cost \$100,000, has awarded a contract for this work to the Roberts & Schaefer Company, Chicago.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to the White Construction Company, Milwaukee, Wis., for the construction of two subways in connection with track depression work in that city, the cost of which will approximate \$60,000.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded contracts to the Ogle Construction Company, Chicago, for the construction of a 150-ton coaling station at Bridgeport, Neb., and for the construction of 100-ton coaling stations at Fairmont, Neb., and Benkleman.

CHICAGO, MILWAUKEE & ST. PAUL.—This company has resumed work on its Chicago and Evanston division track elevation between Irving Park boulevard and Howard street and contemplates finishing the balance of the program comprising the construction of a fourth track with necessary bridge slabs and seven stations to cost \$700,000.

DODGE CITY & CIMARRON.—This company, which was reported in the *Railway Age* of February 11 as applying to the Interstate Commerce Commission for authority to construct a 56-mile extension to its line from Satanta, Kan., through Haskell, Grant and Stanton counties, has obtained this authority and awarded the contract for the work to the Scott, White Company, St. Louis, Mo., which is now undertaking this work.

GULF, COLORADO & SANTA FE.—This company has awarded a contract to H. D. McCoy, Cleburne, Tex., for the construction of a freight station at Brenham, Tex., to consist of a two-story head house, 32 by 36 ft., and a 32 by 80-ft. warehouse, together with covered and uncovered platforms.

GULF & SHIP ISLAND.—This company is now building with company forces at Gulfport, Miss., an all-steel combined engine house, boiler shop and blacksmith shop and a masonry and steel machine shop, together with cinder handling facilities and new track, the construction of which will involve an expenditure of \$250,000.

ILLINOIS CENTRAL.—This company, which was reported in the *Railway Age* of July 16, 1921, as having closed bids for the construction of a 20,000-gal.-per-hour capacity pumping station at Ramsey, Ill., and which decided later to postpone the work, has awarded the contract to Joseph E. Nelson & Sons, Chicago.

ILLINOIS CENTRAL.—This company will close bids early in May for the construction of a \$75,000 brick freight station at Baton Rouge, La.

KETTLE VALLEY.—This company has now under way the construction of approximately 17 miles of line from Okanagan Falls to Oliver, in the southern district of British Columbia. This work constitutes the third link of a rail and lake system to connect the town of Penticton with irrigated land which the provincial government of British Columbia has prepared for settlement by ex-soldiers. The work is being performed by A. E. Griffin & Company, Vancouver, B. C.

LACOMBE & NORTHWESTERN.—This railroad, which was acquired by the Province of Alberta, Canada, a few years ago, will be extended this season for a distance of about twelve miles. A sum of \$265,000 has been authorized for the purpose and all work will be carried out by contract, bids for which will be called in the near future.

LEHIGH & NEW ENGLAND.—This company has awarded a contract to F. H. Clement & Company for labor and materials for concrete masonry required for four bridge replacements in the state of New York and two in New Jersey and for the temporary support of tracks during construction. The estimated cost of this work is \$58,000.

LOS ANGELES & SALT LAKE.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch from Delta to Fillmore, Utah, 35 miles.

MICHIGAN CENTRAL.—This company, which was reported in the *Railway Age* of March 25 as having closed bids for the construction of a \$35,000 brick passenger station at Hastings, Mich., has awarded a contract to the Ehle Construction Company for this work.

MISSOURI PACIFIC.—This company, which was reported in the *Railway Age* of April 1 as receiving bids for the replacing of 10 wooden trestles with concrete structures and earth embankments near Aurora, Mo., has awarded contracts for this work to Jerome Moss, Chicago; Roach & Stansel, Memphis, Tenn.; and Walter Denison, Cushman, Ark., who will handle the work jointly.

MISSOURI & NORTH ARKANSAS.—This company has appropriated \$750,000 of a \$3,500,000 loan recently secured from the government for placing its property in normal condition. Of this amount, it is estimated that approximately \$9,000 will be expended for renewals of water stations and \$82,000 for bridge renewals. The major portion, if not all of this work, is to be done by company forces.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—This company is undertaking with company forces the construction of two bridges over the Harpeth river, each bridge to consist of three 96-ft. deck plate girders, with creosoted timber ballast decks supported on concrete piers and abutments, which work will cost approximately \$160,000. The contract for the steel work was let to the American Bridge Company.

NEW YORK CENTRAL.—This company has awarded a contract to the Walsh Construction Company, Davenport, Iowa, for the Garrison tunnel improvement work near Garrison, N. Y. The estimated cost is about \$500,000 and will consist of the excavation for an open cut in rock for two tracks to the east of the existing tracks and on line for a permanent four-track development.

NORTHERN PACIFIC.—This company has awarded a contract to Grant Smith & Co., St. Paul, Minn., for a new bridge over the Mississippi river at Minneapolis, Minn., to cost \$400,000 and has awarded a contract to the Campbell Construction Company, St. Paul, Minn., for a permanent bridge at Maryland street, St. Paul, to cost approximately \$60,000, and has closed bids on construction work on dock No. 6, Duluth, Minn., to cost \$77,000.

OKLAHOMA NORTHERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line from Vinita, Okla., to Coffeyville, Kans., 42 miles.

PENNSYLVANIA.—This company will this summer build an addition to its concrete, fireproof grain elevator at Baltimore, Md., to take care of an additional 1,300,000 bu. of grain.

SOUTHERN PACIFIC.—This company has entered into an agreement with the city of Houston, Tex., for the construction of a subway in that city, the contract for which has been awarded to Walling-Haralson & Adams Company, Houston, Tex.

WESTERN PACIFIC.—This company has placed an order with the McClintock-Mitchell Company for structural steel for one 210-ft. through-riveted electrically operated draw span, one 100-ft. through-plate girder, and one 80-ft. through-plate girder for the renewal of a bridge crossing the San Joaquin river near Stockton, Cal., this work to be undertaken by company forces during the latter part of July.

Railway Financial News

CHESAPEAKE & OHIO.—Asks Authority for Equipment Trust Certificates.—This company has applied to the Interstate Commerce Commission for authority to issue \$7,635,000 of 5½ per cent, 15-year equipment trust certificates which have been sold to Kuhn, Loeb & Co., at 98.

CHICAGO & ALTON.—New Directors.—E. M. Richards connected with the Boston office of Hayden, Stone & Co., and Samuel W. Moore, general counsel for the Kansas City Southern, have been elected directors of the Chicago & Alton to succeed Charles Hayden and M. L. Bell, chairman of the board and vice-president, respectively, of the Chicago, Rock Island & Pacific. The latter resigned in compliance with the decision of the Interstate Commerce Commission that the Rock Island and the Chicago & Alton are competing roads.

CHICAGO & EASTERN ILLINOIS.—New Director.—Will H. Hays, former postmaster general, has been elected a director.

CHICAGO, MILWAUKEE & ST. PAUL.—Annual Report.—The annual report issued this week shows the following income account for the year ended December 31, 1921:

	1921	1920
Railway operating revenues.....	\$146,765,766	\$141,643,202
Railway operating expenses.....	127,957,002	134,087,552
Net railway operating revenue.....	18,808,764	7,555,650
Railway operating income.....	9,763,129	*1,372,519
Non-operating income.....	4,371,858	29,755,776
Gross income.....	14,134,987	31,128,295
Interest on funded debt.....	18,767,681	17,593,581
Total deductions.....	25,205,596	26,762,274
Net income.....	Def. 11,070,609	4,366,071

*March 1 to Dec. 31, inclusive.

CLEVELAND UNION TERMINALS COMPANY.—Asks Authority to Issue Securities.—This company has applied to the Interstate Commerce Commission for authority to issue and sell 100 shares of capital stock to the owning companies and \$12,000,000 of first mortgage 5½ per cent, 50-year sinking fund gold bonds guaranteed by the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis, the proceeds to be used to pay for real estate acquired and to be acquired and for construction work on the proposed passenger terminal.

DULUTH, SOUTH SHORE & ATLANTIC.—Annual Report.—The income account for the year ended December 31, 1921, compares as follows:

	1921	1920*
Total operating revenues.....	\$4,452,424	\$5,142,519
Total operating expenses.....	4,601,855	4,606,212
Net operating revenue.....	Def. 149,431	536,307
Railway tax accruals.....	352,895	250,435
Operating income.....	Def. 502,768	285,665
Total non-operating income.....	47,578	496,358
Gross income.....	Def. 455,190	782,023
Interest on funded debt.....	873,755	876,770
Total deductions from gross income.....	1,127,662	1,111,706
Net loss.....	1,582,852	329,683

*Operating revenues and expenses, March 1 to Dec. 31.

The comparative statement of revenues and expenses and the principal traffic statistics for the year ended December 31, 1921, follow:

OPERATING REVENUES		
	1921	1920
Freight	\$2,722,401	\$3,576,909
Passenger	1,161,074	1,369,903
Total, including other.....	\$4,464,863	\$5,949,891
OPERATING EXPENSES		
Maintenance of way and structures.....	\$866,807	\$1,153,841
Maintenance of equipment.....	970,809	1,063,889
Traffic	80,128	65,572
Transportation	2,420,043	3,076,865
General	147,831	151,078
Total, including other.....	\$4,565,202	\$5,598,701
Net operating revenue.....	Def. \$100,339	\$351,189
Taxes accrued	357,084	356,028
Operating income	Def. 457,869	Def. 5,275
PASSENGER TRAFFIC		
Number of passengers carried earning revenue.....	730,974	908,478
Number of passengers carried one mile.....	33,881,290	46,641,206
Average distance carried, miles.....	46.35	51.34
Average receipts per passenger per mile.....	\$0.343	\$0.294

FREIGHT TRAFFIC

Number of revenue tons carried.....	2,092,935	3,755,912
Number of tons carried one mile.....	201,427,248	355,596,169
Average distance haul of one ton, miles.....	96.24	94.68
Average receipts per ton per mile.....	\$0.142	\$0.113

GULF COAST LINES.—Annual Report.—The annual report of the New Orleans, Texas & Mexico issued this week shows the following income account for the year ended December 31, 1921:

	1921	1920
Operating revenues	\$11,090,101	\$13,435,246
Operating expenses	8,215,473	11,141,034
Net from railway operations	2,874,628	2,294,212
Railway tax accruals	426,094	378,875
Railway operating income	2,448,534	1,915,337
Net railway operating income	2,141,708	1,008,431
Total non-operating income	861,946	891,190
Gross income	3,003,655	1,899,621
Interest on funded debt	1,114,390	1,060,582
Total deductions from gross income.....	1,190,387	1,161,571
Net income	1,813,268	738,050
Dividend appropriations of income (dividend on capital stock)	890,848	297,370
Income appropriated for investment in physical property	323,107	694,210
Balance transferred to profit and loss	599,312	Def. 253,531

ILLINOIS CENTRAL.—To Issue Stock.—The directors have authorized the issuance of \$10,929,600 6 per cent convertible preferred stock, subject to the approval of the Interstate Commerce Commission. It will be offered for subscription at par to stockholders of record at the close of business May 16 to the amount of 10 per cent of the common stock registered in their name as of that date, and fractions of shares in like proportion.

One-third of the outstanding common stock of the Illinois Central is owned by the Union Pacific and that road has agreed to take its proportion of the new issue. The remainder will be underwritten by Kuhn, Loeb & Co. Payment for the stock will be required before June 26, 1922.

This issue by the Illinois Central is part of the \$50,000,000 issue authorized by stockholders at the annual meeting held on April 19. It is preferred both as to dividends and to assets and is entitled to receive non-cumulative dividends at the rate of 6 per cent a year from June 26, 1922, payable semi-annually, on March 1 and September 1. The stock will be convertible into common stock at the holder's option after September 1 next, share for share, and will be subject to redemption as a whole on any semi-annual dividend date after September 1, 1927, on 60 days' notice at a premium of 15 per cent and accrued dividends. Stock called for redemption shall continue to be convertible up to 30 days prior to the redemption date.

Annual Report.—This company's annual report for 1921 is reviewed in an article on another page of this issue entitled "Maintenance Reserve Items Hurt I. C.'s 1921 Showing." See also excerpts from annual report on adjacent pages.

LAKE ERIE & WESTERN.—Van Sweringen Interests Buy Control.—The New York Central has sold its majority interest in the Lake Erie & Western to the Van Sweringen interests of Cleveland for \$3,000,000. Albert H. Harris, vice-president of the New York Central, stated that \$35 a share, or \$2,075,500, was received for its 59,300 shares of preferred stock. The balance of \$924,500 is at the rate of \$15.57 a share for the 59,400 shares of common.

The Lake Erie & Western had an operating mileage on December 31, 1920, of 738 miles. Its main line runs from Sandusky, Ohio, to Peoria, Ill.

The Van Sweringen interests last March purchased the control of the Toledo, St. Louis & Western. These interests also control the New York, Chicago & St. Louis. See editorial in this issue entitled "The Van Sweringen Group."

MATTAWAMKEAG & EASTERN.—Asks Authority to Issue Securities.—This company, which proposes to build a line in Maine as an extension of the proposed line of the Eastern Maine, has filed application with the Interstate Commerce Commission for authority to issue \$80,000 of stock and \$500,000 of 30-year 7 per cent gold bonds.

MISSOURI PACIFIC.—To Pay Bonds.—This company has announced that in accordance with the terms of the mortgage securing its first and refunding 5 per cent bonds, all of the Series B bonds under that mortgage will be paid on August 1, next. Payments will be made at the Guaranty Trust Company, New York City.

NEW ORLEANS, TEXAS & MEXICO.—Authorized to Issue Bonds.—This company has been authorized by the Interstate Commerce Commission to procure authentication and delivery to its treasurer of \$457,400 of first mortgage bonds and to issue \$991,100 of such bonds to be sold at not less than 98 or to be pledged as security.

NEW YORK, LAKE ERIE & WESTERN.—Authorized to Extend Bonds.—The Interstate Commerce Commission has approved a

joint application of this company and the Erie for an order authorizing the extension of the date of maturity of \$3,000,000 of first mortgage bonds of the New York, Lake Erie & Western from May 1, 1922, to May 1, 1942, and to reduce the interest rate from 6 to 5½ per cent. The Erie is authorized to assume liability as a guarantor in respect of the bonds.

PERE MARQUETTE.—Annual Report.—The annual report issued this week shows a corporate income account for the year ended December 31, 1921, as follows:

	1921	*1920
Operating revenues	\$38,303,029	\$35,022,787
Operating expenses	30,036,300	30,350,542
Net operating revenue	8,266,729	4,672,245
Non-operating income	690,654	1,761,120
Gross income	8,957,383	6,433,365
Taxes	1,408,481	768,407
Interest on bonds	1,687,754	1,687,760
Total deductions	5,191,502	5,039,392
Surplus	3,765,880	1,393,973

*Operating revenues and expenses, March 1 to December 31.

RAPID CITY, BLACK HILLS & WESTERN.—Six Months' Guaranty Certified.—The Interstate Commerce Commission has certified the amount of this company's guaranty for 1920 as \$23,685, of which \$8,685 was still to be paid.

SAN ANTONIO & ARANSAS PASS.—Bonds Offered.—P. W. Chapman & Co., New York, are offering a block of first mortgage 4 per cent bonds, dated December 20, 1892, and due on January 1, 1943, to yield more than 5.70 per cent. They are non-callable and their principal and interest are guaranteed by the Southern Pacific Company's indorsement.

ST. LOUIS-SAN FRANCISCO.—Annual Report.—This company's annual report for 1921 is reviewed in an article on another page of this issue entitled "Frisco Improves Financial and Physical Condition." See also excerpts from annual report on adjacent pages.

Bonds Offered.—A syndicate composed of Lee, Higginson & Co., Guaranty Company of New York, Speyer & Co., and J. & W. Seligman & Co., are offering a new issue of \$6,932,000 St. Louis-San Francisco Railway Company prior lien mortgage 5½ per cent gold bonds, series D. The bonds are dated January 1, 1922, due January 1, 1942, and are offered at 95, to yield 5.95 per cent.

These bonds are part of an issue of \$10,932,000, authorized by the Interstate Commerce Commission, in substitution for an equal amount of 6 per cent bonds now in its treasury. The remainder are to be pledged and repledged from time to time as collateral security for short-term notes.

VIRGINIA RAILWAY.—New Director.—James H. Perkins, president of the Farmers' Loan & Trust Company of New York, has been elected a director.

WESTERN MARYLAND.—Annual Report.—The corporate income account for the year ended December 31, 1921, compares as follows:

	1921	1920
Operating revenues	\$17,619,972	\$17,310,764
Operating expenses	13,820,664	16,863,404
Net operating revenue	3,799,308	447,360
Tax accruals	777,462	533,600
Total operating income	3,021,846	Def. 88,784
Total other income	824,628	*3,363,247
Gross income	3,846,474	3,274,463
Interest on funded debt	2,500,370	2,412,812
Total deductions	3,371,286	3,196,898
Net income	474,528	77,565
Settlements of accounts prior to January 1, 1918, made by U. S. R. A.	53,231	19,830
Credit income balance	421,296	57,735

*Includes standard return for months of January and February, 1920; also partial payments on account of claim for guaranty.

Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Wabash	\$1,500,000
International & Great Northern	100,000
Richmond, Fredericksburg & Potomac	94,000
Richmond, Fredericksburg & Potomac Railroad Co., as successor of Washington Southern Railway Co.	187,500

Lexington Union Station	17,000
Wood River Branch	1

Tentative Valuations

The Interstate Commerce Commission has issued additional tentative valuations giving the final value as of the valuation dates, as follows:

		Owned	Used
Danville & Western	1916	\$1,978,347	\$1,979,127
Lake Champlain & Moriah	1916	853,020	.....
Augusta Southern	1916	140,576	.....
Bay Point & Clayton	1916	136,000	138,800
Troy Union	1917	1,084,045	1,082,305
Elkin & Allegheny	1915	335,046	335,080
North Western Coal Railway	1915	775,000	.....
Tallulah Falls	1916	1,808,832	1,808,954
Middletown & Unionville	1916	389,847	.....
Hill City	1916	301,104	343,104
Augusta Belt	1916	95,000	.....
Williamson & Pond Creek	1916	1,222,044	.....

Treasury Payments to Railroads

The treasury department announced on May 1 that since last announcement, dated April 1, payments under Sections 204, 209, 210 and 212 of the Transportation Act of 1920, as amended, have been made by the Treasury as follows:

Section 204:	
Elwood, Anderson & Lapelle	\$ 15,693.35
Kentwood & Eastern	8,764.96
Kentwood Greensburg & Southwestern	52,423.22
Ursina & North Fork	3,094.98
Section 209:	
Buffalo, Rochester & Pittsburgh	61,093.21
Deering Southwestern	3,623.67
Detroit, Bay City & Western	13,313.36
Gulf, Florida & Alabama, Receiver	6,684.92
Lake Erie & Western	140,918.65
Lufkin, Hemphill & Gulf	10,851.76
Rapid City, Black Hills & Western	8,685.30
The Ulster & Delaware	69,450.00
Western Allegheny	39,226.17
Section 210:	
Missouri & North Arkansas	3,500,000.00
The Seaboard-Bay Line	1,100,000.00
Section 212:	
International & Great Northern, Receiver	528,010.15
Total	\$5,561,833.70

The total payments to April 30, 1922, have been:

(a) Under Section 204, as amended by Section 212 for reimbursement of deficits during Federal Control:	
(1) Final payments, including partial payments previously made	\$1,542,345.35
(2) Partial payments to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission	1,731,841.15
Total payments a/c reimbursement of deficits	3,274,186.50
(b) Under Section 209, as amended by Section 212, for guaranty in respect to railway operating income for first six months after Federal Control:	
(1) Final payments, including advances and partial payments previously made	9,612,321.17
(2) Advances to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission	259,170,874.00
(3) Partial payments to carriers as to which a certificate for final payment has not been received, as stated above	164,510,485.20
Total payments account of said guaranty	433,293,680.37
(c) Under Section 210, for loans from the revolving fund of \$300,000,000 therein provided	303,078,717.00
Total	\$739,646,583.87

Dividends Declared

Canadian Pacific.—Common, 2¼ per cent, quarterly, payable June 30 to holders of record June 1.
Central Railroad of New Jersey.—\$2, quarterly, payable May 15 to holders of record May 10.
Cleveland & Pittsburgh.—Regular guaranteed, \$0.87½, quarterly; special guaranteed, \$0.50, quarterly; both payable June 1 to holders of record May 10.
Norfolk & Western.—Common, 1¼ per cent, quarterly, payable June 19 to holders of record May 31.

Trend of Railway Stock and Bonds Prices

	May 2	Last Week	Last Year
Average price of 20 representative railway stocks	65.26	65.96	55.06
Average price of 20 representative railway bonds	86.58	86.62	73.73

Annual Report

Illinois Central Railroad Company — Seventy-Second Annual Report

To the Stockholders of the Illinois Central Railroad Company:

The Board of Directors herewith submits the following report of the operations and affairs of your company for the year ended December 31, 1921. The number of miles of road operated as of December 31, 1920, was 4,799.40. There was a decrease in miles of road due to the construction of a new bridge in a new location over the Chicago River on the St. Charles Air Line and to the remeasurement of the South Chicago Branch at 67th Street, Chicago, of 0.03

The average number of miles of road operated during the year, and the number of miles operated December 31, 1921, was 4,799.37

INCOME

A summary of the income for the year ended December 31, 1921, as compared with the previous year is stated below.

	1921	1920	INCREASE + DECREASE —
Average Miles Operated			
During Year	4,799.37	4,799.44	— 0.07
Operating Revenues	\$141,127,065.71	\$121,804,579.25	+\$19,322,486.46
United States Government— Guaranty Period Claim..	.....	19,499,886.56	— 19,499,886.56
Rental from United States Railroad Administration..	.....	3,399,634.99	— 3,399,634.99
Total Operating Revenues	141,127,065.71	144,704,100.80	— 3,577,035.09
Operating Expenses	109,997,791.08	*121,991,985.37	— 11,994,194.29
Excess of Revenues over Expenses	31,129,274.63	22,712,115.43	+ 8,417,159.20
Taxes	8,119,035.45	7,172,261.96	+ 946,773.49
Uncollectible Railway Re- venues	24,318.81	23,319.80	+ 999.01
Operating Income	22,985,920.37	15,516,533.67	+ 7,469,386.70
Equipment Rents—Net Credit	1,614,026.69	3,196,849.02	— 1,582,822.33
Joint Facility Rents—Net Debit	203,177.54	191,297.36	+ 11,880.18
Net Operating Income...	24,396,769.52	18,522,085.33	+ 5,874,684.19
Nonoperating Income	5,039,238.05	7,219,881.91	— 2,180,643.86
Gross Income	29,436,007.57	25,741,967.24	+ 3,694,040.33
Deductions from Gross In- come	19,735,213.43	12,170,844.96	+ 7,564,368.47
Net Income	9,700,794.14	13,571,122.28	— 3,870,328.14
Disposition of Net Income: Income Applied to Sinking and Other Reserve Funds .....	.....	118,200.00	— 118,200.00
Income Appropriated for Investment in Physical Property	44,519.31	18,080.85	+ 26,438.46
Total Appropriations of Income	44,519.31	136,280.85	— 91,761.54
Income Balance Transferred to Credit of Profit and Loss	9,656,274.83	13,434,841.43	— 3,778,566.60

*Includes operating expenses, corporate, for the months of January and February, 1920, amounting to \$117,657.90, not assumed by the United States Railroad Administration, which was stated separately in the report for 1920.

During the current year your railroad was operated under corporate management. In the preceding year the property was under Federal control the first two months, under corporate management with a Federal guaranty the following six months, and under corporate management without guaranty the remaining four months. As a consequence the only items which are comparable are "Nonoperating Income" and "Deductions from Gross Income," as during the first two months of 1920 when the properties were under Federal control all "Net Railway Operating Income" items were borne by the Government and your company received a rental which, in the income account, is shown opposite "Rental from United States Railroad Administration" and, therefore, the operating accounts comprising "Net Railway Operating Income" include the results for ten months only, while the figures for 1921 are the totals for the year.

To afford a proper comparison of operating results for the two years there has been prepared and will be found below a table headed "Transportation Operations," which for 1920 combines the Federal operations for the first two months of the year and the corporate operations for the balance of the year; and in which the charges to "Maintenance of Way and Structures" and "Maintenance of Equipment" in connection with a reserve for maintenance in 1920 and its cancellation in the year 1921 have been omitted, as explained below.

NONOPERATING INCOME

"Nonoperating Income" this year amounted to \$5,039,238.05 as against \$7,219,881.91 last year, a decrease of \$2,180,643.86. The decrease was due to a reduction of \$100,000.00 in dividends received on Madison Coal Corporation stock; to the nonreceipt this year of interest on Louisville, New Orleans & Texas Railway Company Second Mortgage Income Bonds, whereas in the previous year there was received from this source \$2,081,014.38; and to a decrease in other interest receivable from the Yazoo and Mississippi Valley Railroad Company of \$447,115.26. As against these decreases there was found to be due and included in this amount for 1921 \$113,270.44 additional rental for the Federal control period not previously included in your company's income. There was a net increase in other items entering into "Nonoperating Income" amounting to \$334,215.34, consisting largely of increases in interest on funds on deposit with bankers and others, miscellaneous rent income and minor miscellaneous income items.

DEDUCTIONS FROM GROSS INCOME

"Deductions from Gross Income" amounted to \$19,735,213.43, an increase of \$7,564,368.47 over the previous year. There was an increase of \$966,487.11 in "Interest on Funded Debt." This increase was due to the

inclusion of interest for an entire year on securities issued last year, in addition to interest for portions of the year on securities issued during the current year, less interest on equipment trust and other securities retired, as compared with a part year's interest on securities issued during 1920, a comparison of which may be made from Table 8 of this year's report and Table 7 of last year's report. "Interest on Unfunded Debt" decreased \$1,313,795.12. This decrease was due to including in this account for the previous year an adjustment in favor of the Director General of Railroads of interest accrued on open accounts, etc., estimated at \$809,496.39 and, in addition, including \$217,353.88 covering interest on loans principally from banks and trust companies, making a total of \$1,026,850.27. In the current year the adjustment of interest due the Government was found to have been over-estimated, and "Interest on Unfunded Debt" was credited \$406,902.00; and, as miscellaneous interest on loans from banks and trust companies was \$119,957.15, this resulted in a net credit to the account named of \$286,944.85.

"Miscellaneous Income Charges" increased \$7,788,082.72, of which \$6,854,541.96 was due to charging this account the amount named and crediting an account shown on the general balance sheet, Table No. 5, "United States Government—Guaranty under Section 209 of Transportation Act, 1920," in reduction of your company's claim against the Government, made necessary by the cancellation of charges to "Maintenance of Way and Structures" and "Maintenance of Equipment," referred to under the head of "Railway Operating Expenses" below. In addition to the amount named, \$563,288.02 was due to an adjustment further reducing the deficit in "Net Railway Operating Income" for the guaranty period and \$370,252.74 to loss in operation of the Dubuque & Sioux City Railroad for the current year, less minor miscellaneous adjustments.

TRANSPORTATION OPERATIONS

The results of transportation operations this year, compared with last year, referred to above, are as follows:

Railway operating revenues:

	1921	1920	INCREASE + DECREASE —
Freight (including bridge tolls and miscellaneous freight)	\$107,092,090.55	\$106,178,885.96	+\$913,204.59
Passenger (including bridge tolls and miscellaneous passenger)	24,740,350.62	27,041,277.73	— 2,300,927.11
Mail	2,505,671.37	3,976,419.71	— 1,470,748.34
Express	2,326,832.50	3,057,446.68	— 730,614.18
Other passenger train....	880,517.13	864,654.58	+ 15,862.55
Other transportation	1,413,524.02	1,359,123.41	+ 54,400.61
Incidental and joint facility	2,168,079.52	2,676,463.74	— 508,384.22
Total railway operating revenues	141,127,065.71	145,154,271.81	— 4,027,206.10
Railway operating expenses:			
Maintenance of way and structures	22,437,587.08	25,870,907.11	— 3,433,320.03
Maintenance of equipment.	34,591,449.68	37,344,276.57	— 2,752,826.89
Traffic	1,887,711.35	1,348,463.91	+ 539,247.44
Transportation	53,603,439.42	65,017,065.61	— 11,413,626.19
Miscellaneous operations..	1,009,049.13	1,217,729.61	— 208,680.48
General	3,679,022.95	3,560,290.35	+ 118,732.60
Transportation for invest- ment—Cr.	Cr. 355,926.57	Cr. 177,219.28	— 178,707.29
Total railway operating expenses	116,852,333.04	134,181,513.88	— 17,329,180.84
Net revenue from railway operations	24,274,732.67	10,972,757.93	+ 13,301,974.74
Railway tax accruals.....	8,119,035.45	8,183,911.96	— 64,876.51
Uncollectible railway re- venues	24,318.81	31,179.51	— 6,860.70
Railway operating income.	16,131,378.41	2,757,666.46	+ 13,373,711.95
Equipment rents—net credit	1,614,026.69	3,772,201.89	— 2,158,175.20
Joint facility rents—net debit	203,177.54	186,622.69	+ 16,554.85
Net railway operating in- come	17,542,227.56	6,343,245.66	+ 11,198,981.90

RAILWAY OPERATING REVENUES

"Railway Operating Revenues" amounted to \$141,127,065.71 this year as compared with \$145,154,271.81 last year, a decrease of \$4,027,206.10, or 2.77 per cent.

The increase of \$913,204.59, or .86 per cent, in "Freight Revenue" is due to the higher freight rates during the current year, largely offset by the decline in the volume of traffic handled as a result of the prevailing business depression. The tons of revenue freight carried one mile this year were 11,084,093,960, a decrease of 2,640,138,926 ton miles, or 19.24 per cent, as compared with the previous year. The heaviest decreases were in bituminous coal, in lumber and other forest products, in manufactures and miscellaneous, and in merchandise. There was a substantial increase in the tonnage of grain handled.

The decrease of \$2,300,927.11, or 8.51 per cent, in "Passenger Revenue" is due to the substantial falling off in passenger travel which was affected by the general depression in business existing throughout the year. The revenue passengers carried one mile decreased 172,665,685, or 17.57 per cent. The decline in the volume of traffic was offset in part by increased rates which were in effect during the year as against only four months of the previous year, the average revenue per passenger per mile being 3.053 cents, an increase compared with last year of .303 cent, or 11.02 per cent.

The decrease of \$1,470,748.34, or 36.99 per cent, in "Mail Revenue" is due principally to the inclusion in mail revenue for 1920 of \$1,711,711.58, which was a portion of the amount of back mail pay for the years 1916 to 1919, inclusive, awarded under an order of the Interstate Commerce Commission in December, 1919; as against this amount there was included from the same source in the mail revenue for the current year \$248,418.64, resulting in a decrease in mail revenue from this source for the current year of \$1,463,292.94.

The decrease of \$730,614.18, or 23.90 per cent, in "Express Revenue" is due in part to a smaller volume of express traffic handled, but more largely to the inadequate rates received for the transportation of express.

The increase of \$15,862.55, or 1.83 per cent, in "Other Passenger Train Revenue" is due to the higher rates in effect for transportation of milk

and to a slight increase in the volume transported during the current year, partly offset by a decrease in the amount received from the operation of Pullman sleeping cars.

The increase of \$54,400.61, or 4 per cent, in "Other Transportation Revenue" is due to the higher rates for switching service during the current year, partly offset by a decrease in the volume of switching performed and a decrease in "Special Service Train Revenue."

The decrease of \$502,384.22, or 18.99 per cent, in "Incidental and Joint Facility Revenue" is largely due to a decrease in "Dining and Buffet Revenue," "Hotel and Restaurant Revenue," "Station, Train, and Boat Privileges," "Parcel Room Receipts" and "Storage-Baggage," all of which were affected by the falling off in passenger travel, and to a decrease in "Storage-Freight" and "Demurrage" due to a decrease in the volume of freight traffic handled, partly offset by slight increases in "Rents of Buildings and Other Properties" and "Miscellaneous Revenues."

A comparative statement of "Railway Operating Revenues" in detail is contained in Table No. 2.

RAILWAY OPERATING EXPENSES

"Railway Operating Expenses" amounted to \$116,852,233.04 this year as compared with \$134,181,513.88 last year, a decrease of \$17,329,180.84, or 12.91 per cent.

The expenses for each year represent the total railway operating expenses after cancelling the reserve for maintenance referred to above. In explanation of this reserve it should be stated that last year there was included in "Maintenance of Way and Structures Expenses" \$2,744,697.84, and in "Maintenance of Equipment Expenses" \$4,109,844.12, a total of \$6,854,541.96, to cover the additional amount which it was understood your company was entitled to expend for "Maintenance of Way and Structures" and "Maintenance of Equipment" during the guaranty period and which it was necessary to state on the books in order that the amount would be available for those purposes. The amounts so charged to expenses were carried as a reserve to be expended in the future and were shown on the general balance sheet in the account "Other Unadjusted Credits," under the heading "Unadjusted Credits." The Interstate Commerce Commission, in an order dated December 15, 1921, entitled "In the Matter of Final Settlement under Section 209 of the Transportation Act, 1920," prescribed a different method for adjusting maintenance expenses of the guaranty period. As a consequence the entries made in the books in the preceding year were reversed in the current year, and "Railway Operating Expenses" was credited and "Other Unadjusted Credits" was debited a like amount. These entries necessitated an additional entry debiting "Miscellaneous Income Charges" \$6,854,541.96, and crediting the same amount to the general balance sheet account, "United States Government—Guaranty under Section 209 of Transportation Act, 1920," referred to above under the heading "Deductions from Gross Income."

The decrease of \$3,433,320.03, or 13.27 per cent, in "Maintenance of Way and Structures Expenses" is due to decreased outlays for repairs to tracks and expenditures for upkeep of stations and other buildings, accounted for by the decrease in wages, decreased number of overtime hours worked, and reductions in the cost of materials.

The decrease of \$2,752,826.89, or 7.37 per cent, in "Maintenance of Equipment Expenses" is due to decreased expenditures for repairs to freight train cars and locomotives, partly offset by increased depreciation charges because of added equipment and an increase in charges to equipment retirements. The decreased charges for repairs were substantially affected by the decreased number of overtime hours worked and by reductions in the cost of materials and supplies used.

The increase of \$539,247.44, or 39.99 per cent, in "Traffic Expenses" is due in part to the reorganization of the Traffic Department and reestablishment of outside agencies after the termination of Federal control and partly to increased printing expenses on account of the numerous changes in rates and the necessary issuing of voluminous tariffs in connection therewith.

The decrease of \$11,413,626.19, or 17.55 per cent, in "Transportation Expenses" is due in part to a reduction in freight service on account of the decline in the volume of business transported this year as compared with the previous year and the benefit received from placing in service a number of larger new freight locomotives during the year. Other factors contributing to the decrease were a reduction in the cost per ton of coal, economies effected in station, platform, roundhouse and yard terminal operations, conservation in fuel consumption, and the maintenance of train schedules. There were also substantial decreases in the items "Loss and Damage—Freight," "Injuries to Persons," "Damage to Property," and "Damage to Live Stock on Right of Way," as the result of special campaigns for the prevention of the causes leading up to such claims.

The decrease of \$208,680.48, or 17.14 per cent, in "Miscellaneous Operations" is due in part to the falling off in passenger travel and in part to the decreased unit cost of supplies used in dining and buffet cars and hotels and restaurants.

The increase of \$118,732.60, or 3.33 per cent, in "General Expenses" is due to an increase in "Salaries and Expenses of Clerks and Attendants," increased expenditures for "Pensions," and an increase in "General Office Supplies and Expenses" and other miscellaneous items, all of which were partly offset by a decrease in "Law Expenses."

The decrease in expenses resulting from the increase of \$178,707.29 in "Transportation for Investment—Credit" is due to an increase in the rate charged on material transported entering into additions and betterments work and to the completion of work on a number of additions and betterments projects, the major portion of the work in connection with which was performed in previous years, although adjustments were not made until during the current year.

RAILWAY TAX ACCRUALS

"Railway Tax Accruals" amounted to \$8,119,035.45 this year as compared with \$8,183,911.96 last year, a decrease of \$64,876.51, or .79 per cent. There was a substantial decrease in the Federal income tax on account of the reduction in taxable income and a decrease in the Illinois charter tax due to the falling off of taxable earnings on the charter lines this year as compared with last year. These decreases were largely offset by increased state taxes on account of increases in levy rates and the creation in several states of new taxing districts.

UNCOLLECTIBLE RAILWAY REVENUES

"Uncollectible Railway Revenues" amounted to \$24,318.81 this year as against \$31,179.51 last year, a decrease of \$6,860.70.

EQUIPMENT RENTS—NET CREDIT

"Equipment Rents—Net Credit" amounted to \$1,614,026.69 in the current year as compared with \$3,772,201.89 in the preceding year, a decrease of \$2,158,175.20. Owing to the general depression in business the use of freight cars decreased substantially, and, as a consequence, in order to avoid per diem payments your company's freight cars on other lines not in use were returned home, this resulting in the decrease in the credit for equipment rents.

JOINT FACILITY RENTS—NET DEBIT

"Joint Facility Rents—Net Debit" amounted to \$203,177.54, an increase of \$16,554.85 as compared with last year.

PHYSICAL CHANGES

The following is a summary of the more important improvements during the year, the cost of which was charged wholly or in part to "Road and Equipment":

ADDITIONS AND BETTERMENTS—ROAD:

There were 218.68 miles of track laid with 90 pound new steel rail and 84.05 miles of track relaid with second hand steel rail, all of which replaced rail of lighter section.

One hundred eleven new industrial sidings were built or extended.

Two hundred sixty-one new company sidings were built or extended, a net addition of 43.26 miles. Included therein were additions to yard facilities of 24.25 miles at Clinton, Ill., and 6.61 miles at Paducah, Ky.

A track was built from north of Zeigler, Ill., to Royalton Mine No. 2 at Royalton, Ill., a distance of 4.85 miles. A track was also built from a point on the main line south of Zeigler, Ill., to the Lake Creek Mine near Johnston City, Ill., a distance of 8.76 miles, with connections to Old Ben No. 15 and No. 18 Mines, a distance of 1.95 miles. Work was started on tracks from Providence, Ky., to Shamrock Mine, a distance of 2.52 miles; and from a point on the main line north of Central City, Ky., to Holt Mine, a distance of 2.56 miles.

The grading for Markham Yard, located between Harvey, Ill., and Homewood, Ill., referred to in the report of the previous year, was continued.

A new subway eliminating a grade crossing with the Hawkeye highway near Earlville, Ia., was built, and the subways at Washington Street, Bloomington, Ill., and at Lemp and 14th Streets, Fort Dodge, Ia., referred to in the report of last year, were completed.

Work was started on the erection of a reinforced concrete viaduct to carry McLeMORE Avenue over the tracks of the Illinois Central and Yazoo and Mississippi Valley railroads at Memphis, Tenn.

Combination passenger and freight stations were completed at Dowell, Ill., and Speedway, Ill. Work was started on the construction of a brick freight house and driveways, and the conversion of the present freight and passenger station into a passenger station at West Frankfort, Ill.

Improvements were made in the icing facilities at Paducah, Ky., and Louisville, Ky.

A new interlocking plant was constructed at the crossing with the Toledo, St. Louis and Western Railroad at Ramsey, Ill., and work was started on the construction of an interlocking plant at the crossing with the Waterloo, Cedar Falls & Northern Railway at Waterloo, Ia.

Work was started on the erection of a steel car repair shed at McComb, Miss. New mechanical facilities were constructed at Herrin, Ill., and enlargements were made in the mechanical facilities at Havana, Ill., Freeport, Ill., Waterloo, Ia., Dubuque, Ia., and Paducah, Ky. New 100-foot turntables, replacing 85-foot turntables, were installed at Champaign, Ill., Waterloo, Ia., and Dubuque, Ia., and a 75-foot turntable, to replace a 66-foot turntable, was installed at Sioux Falls, S. D.

Water facility improvements included the installation of 100,000-gallon creosoted water tanks at Kimmunity, Ill., Clinton, Ill., Caneyville, Ky., Canton, Miss., and a 50,000-gallon tank at Herrin, Ill.

The construction of block signals between Hsley, Ky., and Princeton, Ky., was completed. At Kensington, Ill., block signals were installed at the Knickerbocker Ice Company's crossover. The extension of automatic block signals south through Paducah, Ky., a distance of 3.6 miles, was begun. At the close of the year 2,451 miles of track were equipped with block signals.

Three thousand eight hundred eighty-two linear feet of permanent bridges and trestles were constructed, replacing pile and timber bridges and trestles; 1,616 linear feet of permanent bridges and trestles and 22,034 linear feet of pile and timber bridges and trestles were rebuilt or replaced by embankment. Twenty-eight miles of track were ballasted or reballasted and brought up to the present standard.

ADDITIONS AND BETTERMENTS—EQUIPMENT:

One hundred Central type freight locomotives and twenty-five 8-wheel switching locomotives were added, and 108 locomotives of various types were disposed of, resulting in an increase of seventeen locomotives. Three Consolidation type freight locomotives were converted into Mikado type freight locomotives, and eight Mogul type freight locomotives were converted into Suburban type passenger locomotives. Thirty-seven of various classes were superheated. The increase in tractive power of locomotives for the year was 5,911,927 pounds.

Fifty-five new passenger cars were added, and ten cars were condemned, destroyed or sold, making a net increase of forty-five cars.

Three thousand six hundred twenty freight cars were added and 3,161 cars were condemned, destroyed, sold or transferred to other classes, resulting in a net increase of 459 cars.

GENERAL REMARKS

Of the 100 Central type freight locomotives, referred to under the head of "Additions and Betterments—Equipment," above, fifty were purchased during the year, as were also the twenty-five switching locomotives, at a total cost of approximately \$5,940,000.00. In order to finance this purchase there was issued during the year "Illinois Central Equipment Trust, Series 'G,'" amounting to \$3,564,000.00. The balance of the purchase price was paid in cash by your company.

In connection with Government Equipment Trust No. 33, referred to in the report of last year, there were issued and delivered to the Government during the year additional notes in the amount of \$550,200.00 to cover the purchase price of 150 coal cars received subsequent to the execution of the trust agreement and to provide for the balance of the purchase price of the original 3,500 cars. The total cost of the 3,650 cars covered by Government Equipment Trust No. 33 was \$9,717,500.00, for which your company gave notes aggregating \$9,667,200.00 and paid in cash the balance of \$50,300.00.

The \$8,000,000.00 Illinois Central Railroad Company Fifteen Year Six and One-Half Per Cent Secured Gold Bonds, were issued and sold for the primary purpose of reimbursing your company for outlays previously made for additions and betterments.

The number of stockholders as shown on the books of your company at the close of the year was 15,175, compared with 13,645 last year.

The number of pensioners at the close of the year was 653, and the amount of pensions paid during the year was \$260,248.33, an increase compared with last year of \$33,895.20.

The Board of Directors takes this opportunity to express its appreciation to the officers and employees for their loyal and efficient services during the past year.

By order of the Board of Directors.

C. H. MARKHAM,
President.

[ADVERTISEMENT]

St. Louis-San Francisco Railway Company

TO THE STOCKHOLDERS

Your Directors submit herewith the annual report for the year ended December 31, 1921.

The average mileage operated during the year was 5,256.07 miles, an increase over the previous year of 3.39 miles, due to additional track laid between Tyrone, Ark., and End of Track, Ark.

RESULTS FOR THE YEAR

Operating Revenues were.....	\$86,292,584.22
Operating Expenses were.....	64,385,706.61
Net Operating Revenue was.....	\$21,906,877.61
Taxes were	3,672,703.08
Operating Income, Taxes deducted, was.....	\$18,234,174.53
Miscellaneous Income was.....	397,980.31
	\$18,632,154.84
Rentals and Other Payments were.....	1,237,326.16
Income for the year available for interest was.....	\$17,394,828.68
Interest on Fixed Charge Obligations was.....	9,665,878.62
Balance	\$7,728,950.06
Interest on Cumulative Adjustment Mortgage Bonds was....	2,391,749.71
Balance	\$5,337,200.35
Interest on Income Mortgage Bonds was.....	2,111,520.00
Balance	\$3,225,680.35

In the report for the year ended December 31, 1920, you were advised of the status of the Company's negotiations with the United States Government looking to the settlement with the United States Railroad Administration of matters growing out of the operation of the property during Federal control and also with the Interstate Commerce Commission on account of claims filed by the Company, for itself and its affiliated and subsidiary companies, under the guaranty provisions of Section 209 of the Transportation Act, 1920.

During the year final settlement of the account with the United States Railroad Administration was effected. This settlement embraces all of the System Lines parties to the Standard Form of Contract with the Director General of Railroads, as well as the Quanah, Acme & Pacific Railway Company and the Kansas City, Clinton and Springfield Railway Company. The account with the Director General was somewhat complicated, involving many entries of both debits and credits of varied character. However, a summary of the final settlement may be briefly stated as follows:

At the beginning of Federal control on January 1, 1918, the Director General took over current cash and collected outstanding accounts receivable of the Company, thus receiving funds of the Company amounting to.....	\$10,004,480.49
The Director General assumed all the Company's current obligations on said date, amounting to.....	13,975,624.15
The Company therefore owed the Director General, as a result of the foregoing cash transactions, a net balance of.....	\$3,971,143.66
Less amount due Company on account of "standard return" for the 26 months of Federal control; total \$29,537,987.24, of which the Director General paid \$26,239,569.52, leaving due	3,298,417.72
Net amount owed by Company to Director General.....	\$672,725.94
The Director General continued to prosecute the addition and betterment work in progress on Jan. 1, 1918, and the work done and paid for by the Director General amounted to....	6,020,432.03

Amount owed by Company to Director General, not disputed by either party, except for certain improvement charges to which the Company objected..... \$6,693,157.97 |

Against which the Company set up claims, which were disputed in whole or in part by the Director General, amounting to \$7,123,212.28 for under-maintenance and \$6,897,493.15 for various items such as depreciation, property retired, etc., totalling \$14,020,705.43. The Director General allowed in respect of these claims \$7,243,157.97, offset in part by \$6,693,157.97 owed by the Company as above stated, and paid the balance of \$550,000 to the Company in cash.

Settlement has not yet been effected with the Interstate Commerce Commission of the claims filed by the Company under the guaranty provisions of Section 209 of the Transportation Act, 1920, as amended by Section 212 thereof, but a final claim has been prepared, which was filed with the Commission March 1, 1922.

SECURITIES ISSUED, SOLD OR PLEDGED

In the Annual Report for the year ended December 31, 1920, you were advised that the Company had issued at par to the Director General of Railroads \$14,029,500.00, principal amount, Equipment Notes, dated January 15, 1920, in payment of the cost, as tentatively certified at the time of such issue, of the following equipment purchased from the United States Railroad Administration:

33 Light Mikado Locomotives,
7 Light Switcher Locomotives,
3,500 Double Sheathed 40 Ton Box Cars,
1,000 Composite 50 Ton Gondola Cars.

During the year the Company issued to the Director General of Railroads an additional \$354,000 principal amount, Equipment Notes, dated January 15, 1920, bearing interest at the rate of six per cent per annum, payable semi-annually and maturing serially from January 15, 1921, to January 15, 1935, inclusive. These notes were issued at par in payment of the difference between the tentatively certified cost (\$14,029,500.00) of the equipment referred to, and the actual cost thereof as finally agreed upon.

During the year, additional Prior Lien Mortgage Six Per Cent Bonds, Series C, were authenticated and delivered under the Prior Lien Mortgage, as follows:

Account Equipment Notes Retired	\$901,000
Account Additions and Betterments	5,785,500
Account Terminals and Terminal Facilities.....	13,500
	\$6,700,000

Prior Lien Mortgage Six Per Cent Bonds, Series C, in the face amount of \$2,664,000, were pledged during the year to secure temporary bank loans aggregating \$2,000,000, which since the close of the year have been paid off and the bonds returned to the Company's treasury. In addition to the above the Company held free in its treasury, at the close of the year, \$8,268,000 Prior Lien Mortgage Six Per Cent Bonds, Series C, as shown in the Condensed General Balance Sheet and included in the classification "Unadjusted debits."

Of the \$15,000,000 St. Louis and San Francisco Railroad Company Stock

Trust Certificates for The Kansas City, Fort Scott and Memphis Railway Company Preferred Stock, which in accordance with their terms matured October 1, 1921, holders of \$13,962,800 accepted the offer of exchange made under the plan of reorganization and received from the Reorganization Managers in accordance with the reorganization plan, \$10,472,100 of this Company's Prior Lien Mortgage 4% Bonds and \$3,490,700 of its Adjustment Mortgage 6% Bonds. \$84,300 par value of said Stock Trust Certificates have been exchanged for a like amount of the Preferred Stock of The Kansas City, Fort Scott and Memphis Railway Company.

EQUIPMENT

The Company during the year accounted for a total of 2,355 freight cars rebuilt, the appraised value of which as rebuilt is \$4,013,065.49.

The effect of this rebuilding program has been to restore to active service a large number of cars which, as result of the neglect of repairs during Federal control, had either been standing idle, or been kept in service at a high current repair cost.

ADDITIONS AND BETTERMENTS

The amounts charged to Capital Account during the year for additional main track, described in detail under the head of "Double Track," other improvements of roadway and structures, shop buildings, etc., in the purchase of new equipment and for improvements to existing equipment, were as follows:

ROAD	
Widening cuts and fills	\$160,705.52
Ballasting	21,195.27
Rail and other track material	205,225.28
Bridges, trestles and culverts	75,257.28
Tunnels and subways	30,921.12
Elimination of grade crossings	441.49
Grade crossings and signals	51,586.22
Additional main tracks	674,835.18
Additional yard and industry tracks	8,590.50
Changes of grade and alignments	56,780.90
Roadway buildings	28,702.97
Fences	12,524.50
Freight and passenger stations	301,891.43
Shop buildings, engine houses, etc.	114,218.26
Power plants, shop machinery and tools ..	589,811.52
Assessments for public improvements	100,300.65
Miscellaneous	36,577.15
EQUIPMENT	
New Equipment	12,329.42
Additional charges on new equipment purchased in prior years	503,432.26
Improvements to existing equipment	2,033,966.27
	\$5,019,293.19

DOUBLE TRACK

During the year the Company completed the construction of 27.51 miles of additional main track to provide double track in heavy traffic territory. This includes 6.89 miles from Eureka, Missouri, to Pacific, Missouri; 8.82 miles from Sleeper, Missouri, to Lebanon, Missouri; 1.37 miles from Monett, Missouri, to Globe, Missouri; 9.62 miles from Spring Hill, Kansas, to Olathe, Kansas; and 0.81 miles between Amory, Mississippi, and Aberdeen Junction, Mississippi. There is now in service a total of 93.03 miles of second main track.

MAINTENANCE

The property of the Company has not only been adequately maintained during the year, but, in fact, its physical condition has been materially improved. The adequacy of maintenance expenditures cannot always be accurately gauged by the mere money amount thereof. Several factors have contributed in 1921 to the ability of the Company to secure greater results from a given amount of money expended for maintenance. Wage rates were reduced as result of decision of the United States Railroad Labor Board, effective July 1, 1921. The price of some materials, of which there is a relatively large consumption in maintenance work, has receded from the peak which grew out of war conditions. The efficiency of labor has shown a decided improvement, as the weakening morale and the generally disturbed conditions which were the aftermath of the war and Federal control have been gradually disappearing. This is particularly true with respect to labor employed in maintenance of equipment.

The excess of maintenance expenditures in 1920 over similar expenditures in 1921 was chargeable also, in a considerable measure, to the inclusion in the 1920 charges of large sums lapsing over from previous periods, which were incurred in connection with Additions and Betterments work during Federal control, the accounting for which had not been properly closed out by the Federal Management of the property.

Elsewhere in the report there is set forth the extensive accomplishment in renewal and rehabilitation of rolling stock equipment during the year. The large expenditures made therefor and charged to Capital Account have had a direct effect in reducing the expenditures necessary for adequate maintenance.

INCOME ACCOUNT FOR YEAR ENDED JUNE 30, 1921

At the time of Reorganization, and the preparation of the Adjustment Mortgage and the Income Mortgage of the Company, the fiscal year for the making of the Annual Report to the Interstate Commerce Commission ended June 30. The same fiscal year was adopted in both the Adjustment Mortgage and the Income Mortgage.

This has since been changed by the Interstate Commerce Commission so that the period for making the Annual Reports is now the calendar year instead of the year ending June 30, and as a consequence the Annual Report filed with the Commission does not show income for the fiscal year ending June 30.

The following statement shows the income account for the fiscal year ended June 30, 1921, as certified by Messrs. Deloitte, Plender, Griffiths & Company, Certified Public Accountants.

Two months (July and August) Guarantee under the Transportation Act, 1920, based on the Standard Return as finally certified by the Interstate Commerce Commission..	\$2,340,676.90
Increased Compensation on account of equipment allocated and purchased and Additions and Betterments (Net) completed at March 1, 1920, and during Guaranty Period	229,104.61
Difference between Tentative Standard Return taken into account and Standard Return as finally certified Jan. 1, 1918-Feb. 29, 1920	453,953.29
Net Operating Income, September 1, 1920-June 30, 1921	12,812,356.81

\$15,836,091.61

Other Income:	
Rentals	\$261,126.40
Interest	67,339.19
Miscellaneous Income	166,850.65
Total Other Income	495,316.24
Gross Income	\$16,331,407.85
Deductions from Income:	
Rentals	\$224,766.71
Miscellaneous Taxes	173,195.90
Miscellaneous Income Charges	19,365.47
Sinking Funds	48,547.44
Total Deductions from Income	465,875.52
Balance available for interest, etc.	\$15,865,532.33
Interest on Fixed Charge Obligations	9,633,471.78
Balance	\$6,232,060.55
Interest on Cumulative Adjustment Mortgage Bonds	2,365,860.69
Balance	\$3,866,199.86
Interest on Income Mortgage Bonds	2,111,520.00
Balance	\$1,754,679.86

The acknowledgments of the Board are renewed to the officers and employees for all faithful and efficient service.

By order of the Board of Directors,
E. N. Brown, Chairman. J. M. KURN, President.

STATEMENT OF INCOME ACCOUNT

YEAR ENDED DECEMBER 31st, 1921

	Six months ended June 30th, 1921	Six months ended December 31st, 1921	Twelve months ended December 31st, 1921
Average mileage operated			5,256.07
Operating revenues—			
Freight	\$28,597,629.33	\$30,490,679.49	\$59,088,308.82
Passenger	10,764,378.84	10,596,191.38	21,360,570.22
Excess baggage	82,976.43	74,962.79	157,939.22
Parlor and chair car	5,786.87	6,035.70	11,822.57
Mail	1,110,776.32	833,139.94	1,943,916.26
Express	556,913.57	1,386,488.47	1,943,402.04
Other passenger train	12,244.99	168,034.34	180,279.33
Milk		22,769.66	22,769.66
Switching	379,493.54	451,031.16	830,524.70
Special service train	21,736.20	31,318.00	53,054.20
Station, train and boat privileges	78,096.56	16,875.00	94,971.56
Storage—Freight	84,767.70	65,345.17	150,112.87
Demurrage	123,300.53	127,139.31	250,439.84
Other	114,000.78	90,472.15	204,472.93
Total operating revenues	\$41,932,101.66	\$44,360,482.56	\$86,292,584.22

Operating expenses—			
Maintenance of way and structures	\$5,018,637.58	\$6,155,102.92	\$11,173,740.50
Maintenance of equipment	6,870,503.99	7,210,739.97	14,081,243.96
Depreciation	1,118,827.70	1,189,318.18	2,308,145.88
Traffic	563,145.83	503,943.59	1,067,089.42
Transportation	17,917,903.11	15,418,308.85	33,336,211.96
General	1,418,909.96	1,270,743.39	2,689,653.35
Transportation for investment—			
Cr.	208,251.94	62,126.52	270,378.46

Total operating expenses ... \$32,699,676.23 \$31,686,030.38 \$64,385,706.61

Net operating revenue ... \$9,232,425.43 \$12,674,452.18 \$21,906,877.61

Operating charges—			
Railway tax accruals	\$1,705,610.67	\$1,967,092.41	\$3,672,703.08
Uncollectible railway revenues	16,964.93	16,883.47	33,848.40
Hire of equipment—Net—Dr.	144,849.35	283,131.78	427,981.13
Joint facility rents—Net—Dr.	140,880.24	96,721.77	237,602.01

Total operating charges ... \$2,008,305.19 \$2,363,829.43 \$4,372,134.62

Operating income **\$7,224,120.24 \$10,310,622.75 \$17,534,742.99**

Non-operating income—			
Other income	143,787.70	254,192.61	397,980.31

Gross income **\$7,367,907.94 \$10,564,815.36 \$17,932,723.30**

Deductions from income—			
Rentals	\$114,869.59	\$112,064.76	\$226,934.35
Miscellaneous taxes	92,313.27	72,671.04	164,984.31
Miscellaneous income charges	9,670.09	5,441.07	15,111.16
Sinking and other funds	24,542.12	106,322.68	130,864.80

Total deductions from income \$241,395.07 \$296,499.55 \$337,894.62

Balance available for interest, etc.	\$7,126,512.87	\$10,268,315.81	\$17,394,828.68
Interest on fixed charge obligations	4,807,498.34	4,858,380.28	9,665,878.62

Balance	\$2,319,014.53	\$5,409,935.53	\$7,728,950.06
Interest on cumulative adjustment mortgage bonds	1,189,245.14	1,202,504.57	2,391,749.71

Balance	\$1,129,769.39	\$4,207,430.96	\$5,337,200.35
Interest on income mortgage bonds	1,055,760.00	1,055,760.00	2,111,520.00

Balance	\$74,009.39	\$3,151,670.96	\$3,225,680.35
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NOTE—The transactions of the Kansas City, Clinton and Springfield Railway Company, which Company is operated separately, are not included in the above but the amounts advanced by the Kansas City, Fort Scott and Memphis Railway Company to meet the interest on the Kansas City, Clinton and Springfield Railway Company Bonds have been charged against income.

[ADVERTISEMENT]

CONDENSED GENERAL BALANCE SHEET AS AT DECEMBER 31, 1921

ASSETS			LIABILITIES		
Investments—			Stock—		
Investment in road and equipment:			Capital stock:		
Road	\$297,065,364.58	\$365,269,682.73	(a) Common stock	\$50,447,026.00	
Equipment	68,204,318.15		(b) Preferred stock	7,584,300.00	
Sinking funds:			Total capital stock		\$58,031,326.00
Total book assets	\$832,841.12	3,841.12	Long term debt—		
Issues of the railway at par	829,000.00	40,458.51	Funded debt unmatured:		
Cash			(a) Equipment trust obligations	\$14,345,600.00	
Deposits in lieu of mortgaged property sold		1,013,272.54	(b) Mortgage bonds:		
Miscellaneous physical property			Book liability	\$196,920,365.00	
Investments in affiliated companies:			Held by or for the railway, per contra	12,071,195.00	
(a) Stock (pledged)	\$202,334.33	307,665.76	Actually outstanding	184,849,170.00	
(c) Notes	105,331.43		(c) Collateral trust bonds	71,000.00	
Other investments:			(d) Income mortgage bonds	81,162,298.00	
(a) Stock	\$1.00		(e) Miscellaneous	243,809.21	
(c) Notes	84,846.61	121,251.92	Total long term debt		280,621,877.21
(d) Advances	36,404.31		Current liabilities—		
Total investments		\$366,756,172.58	Loans and bills payable (secured)	\$2,000,000.00	
Current assets—			Traffic and car service balances payable	692,628.42	
Cash	\$6,757,262.08		Audited accounts and wages payable	6,839,865.74	
Special deposits	535,566.37		Miscellaneous accounts payable	684,433.80	
U. S. Gov. Liberty Bonds and Certificates of Indebtedness at par	462,650.00		Interest matured unpaid	3,781,805.26	
Loans and bills receivable	134,127.74		Funded debt matured unpaid	12,000.00	
Traffic and car service balances receivable	688,282.00		Unmatured interest accrued	3,318,105.83	
Net balance receivable from agents and conductors	722,498.81		Unmatured rents accrued	14,020.84	
Miscellaneous accounts receivable, including amount due under Transportation Act, 1920	3,595,642.59		Total current liabilities		17,342,859.89
Material and supplies	8,085,507.05		Deferred liabilities—		
Interest and dividends receivable	9,822.78		Other deferred liabilities		5,000.00
Total current assets		20,991,359.42	Unadjusted credits—		
Deferred assets—			Tax liability	\$1,976,398.03	
Working fund advances	\$51,521.64		Insurance reserve	268,250.21	
Insurance fund:			Operating reserve	786,372.11	
Total book assets	\$268,250.21		Accrued depreciation—road	441,455.27	
Issues of the railway at par	140,000.00		Accrued depreciation—equipment	21,466,588.09	
Cash	128,250.21		Other unadjusted credits	3,295,448.30	
Other deferred assets	148,307.17		Total unadjusted credits		28,234,512.01
Total deferred assets		328,079.02	Corporate surplus—		
Unadjusted debits—			Additions to property through income and surplus	\$846,447.26	
Rents and insurance paid in advance	\$31,677.60		Funded debt retired through income and surplus	541,000.00	
Other unadjusted debits	2,984,456.57		Sinking fund reserve	832,841.12	
Securities issued or assumed—			Profit and loss—balance	4,585,881.70	
Unpledged	\$8,438,195.00		Total corporate surplus		6,806,170.08
Pledged	2,664,000.00				
Total unadjusted debits		3,016,134.17			
		\$391,091,745.19			\$391,091,745.19

Railway Officers

Executive

George W. Lupton, whose promotion to assistant to the vice-president in charge of operation of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, effective April 1,



George W. Lupton

to succeed W. K. Etter, promoted, was announced in the *Railway Age* of April 8, was born in England, August 12, 1870. After attending a business college at Los Angeles, Cal., he entered railway service in 1887 as a telegraph operator on the Ohio & Mississippi (now the Baltimore & Ohio Southwestern). With which road he remained for four years as a telegraph operator and as an agent at various places on the St. Louis division. He entered the service of the Northern Pacific in 1891 as an operator and agent on the Yellowstone division. The following year he entered the employ of the Atchison, Topeka & Santa Fe where he worked consecutively as operator, station cashier and agent on the Los Angeles Division, stenographer in the treasury department on the same division, and agent and yardmaster on the Valley division until 1905. From that time until 1907 he was trainmaster on the Arizona and Albuquerque divisions, first at Barstow, Cal., and later at Winslow, Ariz. From 1907 to 1914, he was terminal agent at San Francisco and from 1914 to the date of his recent promotion, was superintendent of the terminal division, with headquarters at San Francisco.

William A. Colston, whose resignation as director of the Bureau of Finance of the Interstate Commerce Commission, and election as vice-president and general counsel of the



W. A. Colston

New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, effective May 1, was reported in the *Railway Age* of April 8, was born in Louisville, Ky., on November 3, 1873. He entered railway service July, 1891, as a mail messenger in the general office of the Louisville & Nashville at Louisville, Ky., and consecutively thereafter held various positions in the accounting department up to and including assistant controller in active charge of accounts and statistics. After the completion of law studies at the Jefferson School of Law (from which he was graduated in 1907, and in which he was afterwards an instructor in interstate commerce law) he was transferred to the law department as commerce attorney. He served in this capacity and later as a general solicitor until May 10, 1920, representing a continuous service with the Louisville & Nashville of 29

years, except for the period from 1898-1899, when he saw military service in Porto Rico as captain in the First Kentucky Infantry, U. S. Volunteers, and for the period from 1916 to 1919, during which he served first as colonel of the First Kentucky Infantry in Mexican border service and later as colonel commanding the 138th Field Artillery and the 63rd field artillery brigade in France. From May 10, 1920, until his election he was director of finance of the Interstate Commerce Commission.

Financial, Legal and Accounting

G. H. Nero has been appointed auditor in charge of all revenue, disbursement and general accounting matters of the New England Steamship Company, the Hartford & New York Transportation Company and the New Bedford, Martha's Vineyard & Nantucket Steamboat Company, with headquarters at New Haven, Conn.

J. J. Ward has been appointed assistant to the general auditor of the New York, New Haven & Hartford and the Central New England with jurisdictions over the general bookkeeping and statistical departments. **J. E. Baldwin** has been appointed auditor of disbursements and **H. V. Clemens** auditor of freight receipts. These changes were effective May 1 and the headquarters of all is New Haven, Conn.

J. H. Ambrose, treasurer of the Nashville, Chattanooga & St. Louis, whose retirement was reported in the *Railway Age* of April 22, was born at Wilton, England, January 22, 1850, and entered railway service in 1875 as a clerk in the superintendent's office of the Nashville, Chattanooga & St. Louis. After serving three years in this capacity he became secretary to the president, which position he occupied until 1880, when he was made chief clerk to the general manager. He served in this capacity and that of purchasing agent from 1880 to 1886. On March 17 of the latter year he was elected secretary and treasurer of the corporation, which position he occupied until his recent retirement, except from July 9, 1918, to January, 1920, during the period of federal control, when he was federal treasurer of the Nashville, Chattanooga & St. Louis, the Tennessee Central and the Birmingham & Northwestern. Mr. Ambrose will continue as a director and a member of the finance committee.

Operating

J. R. Folsom, chief dispatcher of the Erie at Marion, O., has been appointed acting trainmaster succeeding **C. P. Shaughnessy**, furloughed. **M. C. Murphy** has been appointed acting chief dispatcher succeeding Mr. Folsom.

Traffic

H. W. Bondurant has been appointed commercial agent of the Southern with headquarters at Nashville, Tenn., effective May 1.

John T. Stinson, director of agricultural development of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed agricultural and colonization agent, with the same headquarters, the office of director of agricultural development having been abolished.

Albert W. Noyes, whose promotion to assistant general passenger agent on the Chicago Great Western, with headquarters at Chicago, was reported in the *Railway Age* of April 15, was born at Lebanon, Conn., June 15, 1866, and entered railway service in 1885 as a telegraph operator for the New York, New Haven & Hartford. He continued in this position and as agent until 1888, when he entered the service of the St. Paul & Duluth in a similar capacity. After a year with the latter company he entered the service of the Chicago Great Western where he remained until 1892, first as agent operator and later as secretary to the general traffic manager, when he became assistant ticket agent of the Chicago Great Western at Des Moines, Iowa. A few years later he was promoted to traveling passenger agent on the same road and in 1907 became general traveling passenger agent in charge of

field offices, which position he held until his promotion on April 1, to assistant general passenger agent.

Mechanical

Robert Quayle, general superintendent of motive power and machinery of the Chicago & North Western, whose retirement effective May 1, after 54 years of service with this road, was reported in the *Railway Age* of April 29, page 1046, was born on the Isle of Man November 23, 1853, and entered railway service in 1868, as a machinist's apprentice on the Chicago & North Western in its Chicago Avenue shops. In 1872 he was transferred to the shops at Fortieth street, Chicago, where in October, 1877, he was promoted to assistant foreman. Three years later he was made foreman of the car and machine shops. On June 15, 1885, he was promoted to master mechanic with jurisdiction over all lines in Iowa. On April 1, 1891, he was promoted to general master mechanic of the Milwaukee, Lake Shore & Western, where he remained until December 1, 1894, when, following the absorption of this road by the Chicago & North Western, he was promoted to superintendent of motive power and machinery, with headquarters at Chicago. On November 1, 1913, he was promoted to general superintendent, motive power and car department and on March 1, 1920, he became general superintendent, motive power and machinery.



Robert Quayle

Harry T. Bentley, whose promotion to general superintendent of motive power and machinery of the Chicago & North Western, effective May 1, succeeding **Robert Quayle**, retired, was reported in the *Railway Age* of April 29, page 1046, was born in London, England, on June 4, 1862, and was educated at Dulwich College in that country. He entered railway service in 1877 as a machinist's apprentice on the London & Northwestern (England). After 10 years' service he became foreman of the enginehouse of the same road at Chester, England, where he remained until 1892, when he came to America and entered the service of the Chicago & North Western as a machinist in its Chicago shops. Shortly thereafter he was promoted to foreman in the shops at Boone, Iowa, and in 1895 he was transferred to Belle Plaine, Iowa, where he remained until 1898 when he became general foreman of the shops at Clinton, Iowa. Seven months later he was promoted to master mechanic of the Madison division and on December 30, 1899 he was transferred to the Iowa division. On August 31, 1902, he was promoted to assistant superintendent of motive power and machinery, with headquarters at Chicago and on October 31, 1913, he was promoted to superintendent of motive power and machinery, with the same headquarters, in which capacity he served continuously to the time of his promotion to general



H. T. Bentley

superintendent, except for the period from February 2, 1918, to June 19, 1918, when he was assistant director of transportation of the United States Railroad Administration, in charge of mechanical matters, with headquarters at Washington, D. C., in which capacity he served as chairman of the committee organized to prepare plans and specifications for standard locomotives and cars. Mr. Bentley was president of the American Railway Master Mechanics' Association in 1911-1912; and president of the International Railway Fuel Association the following year.

Elred Byron Hall, whose promotion to superintendent of motive power and machinery of the Chicago & North Western, effective May 1, succeeding **H. T. Bentley**, promoted, was reported in the *Railway Age* of April 29, page 1046, was born at Parkersburg, Iowa, December 31, 1870, and entered railway service on September 23, 1889, as an engine caretaker for the Chicago & North Western at Eagle Grove, Iowa. He served in that capacity and later as a machinist's helper until 1892, when he became a shopman at Hawarden, Iowa, where he served until 1898, when he became a locomotive fireman. After nine years' service as a locomotive fireman and three years' service as a locomotive engineman on the Sioux City and the Northern Iowa divisions he became road foreman of engines of the Sioux City division, in which capacity he continued until 1912, when he was promoted to master mechanic of the Wisconsin division, being transferred to the Sioux City and Northern Iowa divisions in 1914. In 1917 he became assistant to the general superintendent of motive power at Chicago, the duties of which office had to do chiefly with labor matters. In 1917 he was appointed assistant superintendent of the Wisconsin division, with headquarters at Milwaukee, Wis., and in 1919 he was promoted to assistant superintendent of motive power at Chicago, with jurisdiction over lines west of the Missouri river. A year later he was promoted to principal assistant superintendent of motive power and machinery with jurisdiction over the entire system.



E. B. Hall

Engineering, Maintenance of Way and Signaling

J. H. Snyder, roadmaster on the Michigan Central, with headquarters at Jackson, Mich., has been promoted to division engineer, with headquarters at Detroit, Mich., effective May 1, to succeed **John Evans**, who will assume jurisdiction over the Detroit-Jackson and the Detroit-Bay City divisions to succeed **E. C. Wurzer**, resigned to enter the firm of **F. Palma & Co.**, contractors, Detroit, Mich.

L. E. Nordholm, assistant signal supervisor on the Chicago, Rock Island & Pacific, with headquarters at Des Moines, Iowa, has been promoted to office engineer in the signal engineer's office at Chicago, to succeed **J. H. Molloy**, who has been promoted to assistant engineer, with the same headquarters. **F. E. Kinney**, assistant signal supervisor, with headquarters at Joliet, Ill., has been promoted to signal supervisor, with headquarters at Cedar Rapids, Iowa, to succeed **J. T. Zahnen**, who has been transferred to Chicago, to succeed **R. R. Baker**, resigned to engage in other business.

Purchasing and Stores

J. E. Bollinger, secretary to the manager of purchases of the American Short Line Railroad Association, has been appointed assistant to the manager of purchases with headquarters at Washington, D. C., effective May 1.